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ABSTRACT

A nationwide systematic approach to assess the developments and achievements of highway safety activities was conducted to measure program outputs from 1969 through 1974 using key indicators of performance such as ratios and percentages. A sample of 10 states was selected with overall sample of 105 local jurisdictions which would provide estimated national highway safety trends. Several criteria were used as the analytic base for the interpretation of national results: trends in program performance (resources, activities, and outputs) matched against growth in numbers of licensed drivers, vehicles, road milage, and miles of highway travel; program productivity in terms of outputs per unit or manpower time; trends in unit cost; and direct and indirect effects of state and community grants. Summaries of findings are given for the following program areas selected for study: (1) the funding of highway safety programs, (2) police traffic services and adjudication, (3) drinking-driver countermeasures, (4) emergency medical services, (5) driver education, (6) driver licensing, and (7) periodic motor vehicle inspection. Making up the bulk of the document (99 pages), key statistics and an extensive statistical analysis are presented for each of the program areas. A list of state and local contacts is included. (Author/EC)

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STATEWIDE HIGHWAY SAFETY PROGRAM ASSESSMENT

a national estimate of performance

JULY 1975

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
PLANNING AND EVALUATION

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preface

The Census lists some 20,000 places in the United States where people live. They range from small hamlets of less than 100 inhabitants to major cities like Chicago. In and around these places 212 million Americans make use of 135 million motor vehicles on almost four million miles of urban and rural roadway. Their safe travel is a national goal.

Relative degrees of highway safety are usually expressed in accidents, injuries and fatalities occurring each year, and the efforts to reduce them can be observed in practically every place in this country.

In early 1973, a systematic approach was begun to assess the developments and achievements of U.S. highway safety programs. Three successive studies were envisioned:

- How NHTSA State and Community Grants (under the Federal 402 Program) were spent by the States -- in terms of equipment and services -- and the catalytic effects these funds produced from Fiscal 1968 through 1973. (Note: This report was completed in October of 1973.)

- The present Assessment -- a much broader examination of highway safety activities nationwide. Partly intuitively and partly through hard experience, highway safety officials at all governmental levels have begun programs they believe will lessen the accident toll. This study measures national program outputs of the efforts from 1969 through 1974, using key indicators of performance such as ratios and percentages.

- A third phase which starts with the findings of the earlier studies, and attempts to determine the effects of safety programs on the level of traffic fatalities, injuries and accidents. This analysis begins in the fall of 1975.

Over 700 persons at State, local and Federal levels contributed to the Assessment. Their time, effort and cooperation were invaluable, as was the help of the Governors' Representatives and their staffs in the ten States which were surveyed for information to project national performance trends. Thanks go as well to the NHTSA Regions and their Assessment contacts, who worked with a number of the States in guiding development of the performance indicators. Finally, the on-the-scene help of the Standard specialists in the NHTSA Traffic Safety Programs organization should be noted. Their expertise and studies laid the groundwork for the majority of indicators.

Particularly fine cooperation was received from two individuals in Traffic Safety Programs: Mr. Robert Wright, row retired, through his liaison work with the States in the early stages of the Assessment; and Dr. Charles Goodwin (with NHTSA under the State/Federal exchange program) who collected information to answer the question "What was spent for highway safety in the nation".

introduction

THE OBJECTIVE: A MEASURE OF NATIONAL TRAFFIC SAFETY PERFORMANCE

The Nation spent $4 billion last year for traffic and highway safety. The problems are well known -- normally over 50,000 fatalities and over 4 million injuries annually. The need for a National safety mission is clear. Yet, despite much thinking and effort no known set of specific remedies can be readily applied to produce a direct, expected reduction of accidents. Present safety efforts must first be sorted out in a systematic way.

With this direction in mind, the current Assessment examines how safety funds were used from 1969 through 1974, and what was produced nationwide. In the ensuing chapters, we will examine the following:

- Highway safety program operational outputs.
- State/local expenditures and Federal 402 funds which were used to achieve program results.
- Program performance trends -- how their growth matched growth in highway risks, as well as social and economic factors which point the way for program decisions.

The analysis was constructed around key indicators of performance which were considered useful to produce national findings. Performance is a word essentially defined by other words: accomplishments, what was done, outputs, efficiency and productivity. For a better meaning there are examples in the study, such as the number of citations for traffic violations, traffic-related ambulance responses, presentence investigations, the cost per unit for these actions, and the trends of these and other indicators over a six-year period compared with the number of drivers and vehicles on the road, their miles of travel, and associated factors.

THE APPROACH: A SAMPLE OF STATES

The next tasks after finalizing the Assessment's concept were to create and define performance indicators and the necessary data to flesh them out. This effort was carried out in the spring and summer of 1974,

and an Assessment Plan was formally submitted to the Secretary of Transportation in July 1974.

The Plan originally called for a completion date of October 1975, but this was moved back to July 1975, to synchronize with the normal program and budgeting cycle. It became apparent that the only manageable way of collecting data for national estimates was through a sampling methodology. An initial 70 sets of stratified random samples of States were drawn and tested against 29 characteristics. For the actual study, this sample of ten States was selected:

Arkansas	Nevada	Ohio	Washington
Florida	New Hampshire	Utah	
Iowa	New Jersey	Virginia	

Program performance data would therefore be collected in a sample of local jurisdictions in each of the ten States. Just as the sample of States was tested for national representation, the locality samples were tested for State representation. In most States ten sample local jurisdictions comprised the State survey, except in the pilot study State of Virginia where eight independent cities and eight independent counties made up the sample. The overall sample consisted of 105 local jurisdictions which when weighted and combined, would provide estimated highway safety trends nationally.

The ten States contain 40 million people, nearly 20 percent of U.S. population. The 105 local jurisdictions represent 80 percent of the population in the ten-State sample. The remaining 20 percent of population is spread among localities with 2,500 residents or less.

In the process of developing the performance measures,a decision had to be made regarding which highway safety program areas would be evaluated. Traffic safety and related activities are covered by a set of 18 Standards. Fourteen are administered by NHTSA and three by the Federal Highway Administration. An additional Standard - Pedestrian Safety - is split between the two agencies. The Assessment selected seven program areas for study; the selection rationale stemmed from the fact that these areas represent over 90 percent of the dollars invested in highway safety by States and localities, and by the Federal program for State and Community Highway Safety grants (Section 402):

Police Traffic Services	Alcohol and Traffic Safety
Adjudication	Driver Education
Emergency Medical services	Driver Licensing
	Periodic Motor Vehicle Inspection

SAMPLE SELECTION METHODOLOGY

A stratified-random sampling approach using population was employed to arrive at a sample of States which would aid development of estimated

national performance trends. Over 70 samples - ranging from eight States up to 16 States - were initially drawn. The balance of this section discusses how the samples were constructed and subsequently tested for national representation.

The 50 States and the District of Columbia which constituted the scope of the Assessment, were first stratified into groups of population ranges. After determining various sample sizes that might eventually be used, States were selected randomly from the various population strata. This yielded over 70 samples which were reasonably proportional to population distribution in this country.

Each sample was tested first for geographical balance, to verify that each was not over-concentrated in any section of the U.S. Thirty-five samples were rejected.

Computer programs were then used to test the remaining samples against 29 characteristics in order to determine whether each sample was representative of the nation. This process generated comparative measures: mean, range, skewness, standard deviation, coefficient of variation and 95 percent confidence intervals. If a sample's confidence interval failed to encompass the known U.S. value for each characteristic, that sample was discarded.

The Assessment used a wide range of characteristics, for example, traffic accidents and fatalities; alcohol consumption; climate; income; licensed drivers and registered vehicles; vehicle travel and roadway mileage; driver education students; and ambulances and attendants.

ASSESSMENT RESULTS: INTERPRETATION

Highway safety expenditures used throughout the Assessment are expressed in 1974 dollars, unless specifically identified as current dollars (for the particular calendar year in question). The Consumer Price Index published by the U.S. Department of Commerce was used to inflate 1968-1973 financial data to 1974 levels.

All quantified national program findings are projections based on the ten-State sample. Exposure factors such as the number of licensed drivers, registered vehicles, road mileage, population and similar statistics were obtained from the Bureau of the Census, Federal Highway Administration, the National Safety Council and similar organizations. Many quantified national findings are numerically large, such as citations, convictions and emergency ambulance responses. In a majority of cases, similar national statistics did not exist for comparison of accuracy. However, other methods were used to check the projections for "order of magnitude" size. Individual State estimates (which were later aggregated

to make national estimates) were checked against comparable data from State agencies. These efforts produced what are believed to be reasonable national estimates. Where doubts exist, the reader is informed at the appropriate place in the analysis.

The following criteria served as the analytic base for interpretation of national results:

- Trends in program performance - resources, activities and outputs - matched against growth in licensed drivers, vehicles, road mileage, and miles of highway travel.
- Program productivity in terms of outputs per unit of manpower or time.
- Trends in unit cost, for example the cost per ambulance response, per citation, and per student trained.
- Direct and indirect effects of State and Community grants (Section 402).

IDENTIFYING FEDERAL GRANT EFFECTS

Associating uses of Federal grants with changes in State and local highway safety programs constituted a major analytic criterion. The Assessment focused on these potential effects, and others:

- New program and funding directions
- Upgraded program standards
- Continued work in innovative approaches
- Training to improve performance
- Well-defined program efforts

Conclusions can be more easily drawn in some cases than others. Large scale highway safety activities which evolve gradually are more difficult to assess. On the other hand, some activities have changed strategies since 1969; the contrast with earlier years can be more easily determined.

Federal dollars will sometimes constitute a small portion of a program area's total resources. Where the Federal money is concentrated on specific activities, its effect is more observable. Federal dollars, however, often supplement a large operating budget, presenting acute measure-

ment problems. The Assessment occasionally infers a relationship between the grant and a beneficial change, recognizing that Federal dollars were not the sole determinant. Conversely, Federal grants often mark the way for subsequent heavier funding from State and local revenues. Here a comparison of Federal with State funding would show the grant effect.

Cost analyses in each chapter provide these trends from 1969 through 1974. The analysis goes further by indicating the services, equipment and training Federal money provided, and what the overall national growth has been. This serves to highlight the Federal effect.

The Assessment recognizes that NHTSA demonstration projects funded under Section 403 accounted for part of the program outputs in certain localities. These outputs are included within the total national performance trends which are this study's chief aim. Where program stimulus is provided by State and Community Grants (Section 402), this is identified -- in keeping with the Assessment's analytic objectives approved by NHTSA and the Office of the Secretary.

summary of findings

The purpose of this Assessment was to measure highway traffic safety performance - nationwide - over a span of six years, in seven program areas. The Assessment was completed on the basis of national projections from a representative sample of ten States, and highlights of findings are summarized below:

THE BROAD OVERVIEW

- Most highway safety performance indicators are up, when measured against the traffic environment as represented by the number of drivers, vehicle miles of travel, registered vehicles, roadway miles and population.

- Productivity, in program areas which are manpower or unit intensive, has been rising. This is evidenced, for example, in traffic law enforcement and emergency medical services.

- Since 1969, the cumulative real growth - in 1974 dollars - for all NHTSA related program areas implemented over the full six years under study has been $500 million, an 18 percent increase, with total national expenditures reaching $3.4 billion in 1974.

- Total highway safety expenditures while growing through 1973, are levelling off, in terms of 1974 dollars.

- State and community grants - under Section 402 of the Highway Safety Act of 1966 - amount to slightly over 2 percent of total expenditures.

- The impact of the State and community grant on performance and similar criteria can only be inferred; as a catalytic vehicle it is most noticeable in several emphasis areas, such as alcohol and emergency medical services.

The Funding of Highway Safety Programs

To arrive at a national projection, cost data for all highway safety programs, except pupil transportation and accident investigation and

reporting, which relate to the role of NHTSA were collected. The seven particular program areas assessed for performance account for over 90 percent of this cost.

- The cost of police traffic services, which reached $2.4 billion in 1974 has grown 16 percent in constant dollars since 1969. Most of the other large (over $100 million per year) programs have shown similar cost growth rates, somewhere between 10 and 16 percent.

- A substantial expenditure growth was found in Alcohol, Emergency Medical Services and Pedestrian Safety Programs as well as in Planning and Administration. These programs have more than doubled - in constant dollars - since 1969, although together these account for less than 3 percent of nationwide highway safety expenditures.

- The proportion of total funds for almost all program areas has remained relatively stable since 1969. Enforcement has consumed 70 percent, and driver education slightly more than 7 percent each year.

- States are shouldering an increasing share of funding - absorbing most of the growth, as local jurisdictions are more sensitive to the economy. The trend is gradual - in 1970, the split was 36 percent State, 62 percent local. By 1974 it had changed to 39 and 59 percent, respectively. Since 1969, State funding had grown by $240 million while local government funding rose only $130 million.

- Federal funding (Sect. 402) has reflected emphasis policies. The allocated proportion for Alcohol programs increased from 4.8 to 12 percent, for Emergency Medical Services from 12 to 18 percent, Police Traffic Services from 18 to 23 percent, and Planning and Administration from 5.8 to 18 percent. At the same time the funding share for Driver Education decreased from 21 to 12 percent and Driver Licensing from 10 to 3.9 percent.

- The leverage, or catalytic effect of Federal (Sect. 402) funds is most apparent in Emergency Medical Services, with a growth in total expenditures of 84 percent, in Pedestrian Safety which has more than doubled, and in Planning and Administration. In each of these areas, the total amount spent since 1969, has grown at a rate higher than the Federal dollar input.

THE PERFORMANCE OF HIGHWAY SAFETY PROGRAMS

Performance, as intended herein, is measured in terms of changes in resources, activities, costs and utilization of 402 funds. These measures, in turn, are related to changes in the number of licensed drivers, vehicle miles of travel, registered vehicles and associated factors. All changes are for the six-year period, 1969 through 1974, unless otherwise noted.

Police Traffic Services and Adjudication

- 350 thousand State and local sworn, uniformed police officers provide overall law enforcement in the 50 States and District of Columbia, and 47 percent of their enforcement hours are spent on traffic services. This represented 300 million hours of traffic enforcement in 1974, a 28 percent growth over 1969 operations.

- The surge in traffic enforcement comes essentially from growth in local police traffic services. Local police time on traffic has increased 34 percent since 1969 versus a smaller growth of 26 percent in their total law enforcement effort.

- Intensified traffic enforcement produced a 42 percent increase in total citations issued during the six-year period -- from 27 million citations (excluding parking) in 1969 to 38 million in 1974. Citations for more serious violations (alcohol traffic offenses, reckless driving, driving with suspended license, etc.) accounted for one-quarter of total citations but increased at half the rate of total citations -- from 7 million in 1969 to 9 million in 1974.

- Measured against driver population and vehicle travel factors, enforcement against drivers has tightened since 1969. Total citations per 1000 licensed drivers increased from 240 in 1969 to 300 in 1974. Measured against vehicle travel, citations increased from 25 to 30 per one million vehicle miles during the six-year period. Serious citations exhibited only a slight increase when measured against the driver and travel factors.

- In 1974, 8.7 million of the 17 million traffic accidents reported by the National Safety Council were investigated by police. The percent investigated during the six years

measured, increased from 47 percent to 51 percent. In one half of these investigations, violations were found and citations resulted.

- The conviction rate for all police traffic citations held constant at 77 percent over the entire six years despite a 42 percent growth in traffic citation caseloads. Conviction rates for serious offenses -- one-fifth of all convictions -- remained stable at 66-68 percent.

- Conviction rates for state police and highway patrol citations were significantly higher than conviction rates for local police citations. This difference remained constant over the six-year period: local police conviction rates averaged 73 percent versus 88 percent for state police and highway patrols. The difference for serious violation convictions is even more extreme: a 61 percent conviction rate for local police versus a 92 percent rate for state police.

- The number of U.S. jurisdictions with police departments able to practice selective enforcement has shown only a slight and gradual increase since 1969. There has probably been limited improvement in police ability to deploy manpower and equipment resources to locations and at peak times of day and week where accidents and their causative violations most often occur.

- Emphasis on traffic service training directly affects the quality of traffic work in the field, and suggests the level of emphasis police departments place on traffic enforcement. Traffic training varies greatly between State and local police agencies. In 1974, state police and highway patrols spent five out of six training hours on traffic enforcement compared with one out of six for local police.

- Recruits for state police and highway patrols received 10 times the traffic training hours that local police recruits underwent. This gap continues despite increased field time on traffic surveillance by local police.

- For both local and state police, citations issued per 50-hour patrol week were up from 1969 to 1973, but dropped for local police in 1974. This decrease in the last year was probably due to an increased use of warnings in lieu of actual citations. Simultaneously, state police citations per 50-hour patrol week continued upward in 1974 as more speed detection occurred to support the national 55 mph ceiling.

- It was found that the number of days required for judicial disposition of traffic violations, as a group, averaged 23 days in the disposition process. The non-serious types of

violations required 16 days, and serious violations required 54 days. No significant changes in these disposition times were noted over the six-year period.

- In 1974, the 300 million hours of traffic services (with supporting equipment) cost $2.4 billion. Translated into an average traffic-duty hour cost, only moderate changes occurred over the 1969-1974 period. For state police and highway patrols, cost per traffic-duty hour rose from $10 to $12. Costs for local police dropped from $8 to $7. The lower cost for local police reflects their lower average salaries.

- The cost per traffic citation (used as a gross indicator of performance) has declined for both local and state police. Local costs dropped from $80 per citation to $70 in the six years, while state police and highway patrol enforcement costs dropped from $65 to $55 per citation. Local police costs remained higher due to relatively less operational time available for observing traffic violations.

- The Federal (Sect. 402) program supplied less than one percent of the police traffic services expenditures over the six-year period. Two-thirds of the 402 dollars went for equipment, vehicles and speed detection devices, particularly for special projects such as Selective Enforcement. The bulk of the remainder went for training, for example to teach police officers how to detect drivers under the influence of alcohol.

Drinking-Driver Countermeasures

- The number of jurisdictions using alcohol enforcement patrols remains relatively low at 590 out of 6435 jurisdictions. However, the number of alcohol-related traffic arrests doubled during the six-year period -- from almost 600,000 in 1969 to 1.1 million in 1974. Arrests as a percent of licensed drivers, total traffic citations, and the more serious citations issued by police, also doubled from 1969 to 1974.

- Alcohol evidentiary tests as a percent of DWI arrests have continued to increase since 1969. The vast majority of these tests continue to be breath tests; and the breath tests became a greater percent of the total tests administered in succeeding years.

- Although the number of drivers arrested for DWI have more than doubled and thereby increased court caseloads, the percent of offenders convicted of the original alcohol offense has remained steady at 75 to 77 percent.

- Courts' use of rehabilitation as a part of the final disposition in alcohol traffic cases has increased by a factor of three during the six-year period. Concurrently, reliance on the traditional sentences imposing fine, jail and license action has declined.

- Background investigation of defendants has grown as a percent of DWI arrest -- from 59 percent in 1969 to 67 percent in 1974. Investigation for BAC results and prior arrests is eight times more likely to occur than investigations involving problem-drinker diagnosis, medical examination, employment check and interviews with the defendant and the family.

- Referrals of defendants by the courts to alcohol rehabilitation has increased significantly: from two in eight defendants in 1969, to five in eight in 1974. Referral is most often to court clinics and safety schools. However, referrals to individual and group counseling have increased from 14,000 referrals in 1969 to 176,000 in 1974.

- Despite significant increases in program performance, funding for alcohol programs remained under the two percent of total U.S. highway safety expenditures. State/local funding in the alcohol program area increased by 50 percent from 1969 to 1974, while Federal 402 obligations doubled. Substantial funding in the alcohol area was also provided by the Alcohol Safety Action Project demonstrations. However, the majority of funding was provided by State and localities under the police traffic services program area -- chiefly for alcohol enforcement.

Emergency Medical Services

- EMS operational capability versus the various estimated levels of traffic accident injuries and fatalities which must be responded to, has improved since 1969. In each succeeding year measured, EMS crews reached a greater portion of U.S. traffic accident victims. In 1974, traffic responses for the first time apparently exceeded the minimum response demand represented by the National Safety Council's estimated auto disabling injuries.

- Improved ambulances, EMTs training and communications helped to increase the number of emergency responses from 1969 to 1974:
  - from 8.8 million up to 12.2 million in total responses.
  - from 1.3 million up to 2.3 million traffic responses.

  The percent of traffic-related responses has increased from 15 percent to 19 percent.

- The overall number of EMS services making emergency responses declined from 18,000 to 16,900 in the six-year period. Funeral homes contributed to most of the decline, dropping from 40 percent of total services to 20 percent from 1969-1974 -- while volunteer fire and rescue groups grew from 30 percent of total services to 50 percent.

- The average number of all responses per ambulance has climbed from 310 to 400. Simultaneously, the average number of traffic responses per ambulance rose from 50 to 80. Traffic responses per 100 million vehicle miles of travel increased from 120 to 187, and traffic responses per 1000 licensed drivers increased from 12 to almost 19.

- The benefits of the increased number of traffic reponses per ambulance are diminished somewhat by the mounting cost for a response. The rise from $25 in 1969 to $30 per response in 1974 (rates corrected for inflation) is basically attributable to more expensive equipment and training costs.

- Federal 402 grants stimulated large State/local EMS traffic-related expenditures from 1969 to 1974. Despite growth in Federal grants, by 1974 States and localities provided three and one-half dollars for each Federal 402 dollar. Over the six years, the State/local share averaged over 70 percent and it continues to increase. Catalytic effects of the Federal dollar can be clearly seen in State and local funding levels.

- Federal (Sect. 402) grants provided the lead in improving EMS services from 1969 through 1974. These funds went basically to municipal and volunteer services which partially filled the void left by a drop in funeral homes making emergency responses. Thirty-seven percent of the grant purchased 2200 ambulances, with design changes to support better patient care enroute to the hospital. The grant trained over 50,000 persons in the DOT 81-hour Basic Care Course; by 1974, half the emergency medical technicians in the U.S. had received this upgraded training, and at least one-third were trained with Federal money. The grant went heavily into improving ambulance communications. By 1974, nine out of ten ambulances were in direct contact with a dispatcher, and 40 percent could receive at the scene/enroute medical advice by radio from hospitals.

Driver Education

- The student population eligible for driver education (age 16) rose seven percent since 1969, but the number of students participating in 30 hour classroom and six hour behind-the-wheel (or equivalent) courses increased by 28 percent, for a total of 3.2 million trained in 1974.

- Instruction on driver simulators and ranges has doubled and training in evasive maneuvers has tripled, although only 66,000 students had obtained this latter training by 1974.

- More States in 1974 were offering a wider variety of traffic safety education curriculum material than in 1969, for example in:

  Pedestrian Safety - from 10 to 50 States plus D.C.
  Bicycle Safety - from 19 to 48 States
  Motorcycle Safety - from none to 45 States
  School Bus Rider Safety - from 23 to 41 States

- The more efficient use of simulators for driver education training accounted for much of the growth in the number of students trained. Simulator productivity increased from an average of 350 to 400 students per installation in 1974.

- The average cost to train one driver education student, due in part to increasing use of simulators and ranges has declined from 83 dollars in 1969 to 75 dollars in 1974.

- Nearly two-thirds of the driver training simulators and three-fourths of the driving ranges purchased by all States since 1969 were partially financed with Federal funds. These installations contributed significantly to both the growth in number and efficiency of training students.

Driver Licensing

- Since 1969, more States have passed legislation or adopted procedures for making the driver licensing process more effective. The number of States using:
  - automated (non-vision) testing equipment increased from four to 25.
  - Classified licenses, an increase from 17 to 24.
  - Periodic driver reexamination, from 29 to 35.
  - Medical advisory boards, from 36 to 43.

- There has been a significant shift in actions taken against repeat offenders. The emphasis is on curbing them earlier by sending out more warning letters - 3.3 million in 1974 as against 900 thousand in 1969.

- The use of driver improvement schools, discussion and therapy group sessions has, in the aggregate, increased from 160 thousand in 1969 to over 400 thousand actions in 1974.

- Almost 3 million drivers were put on probation in 1974, an increase of 43 percent since 1969 - which matched the percentage increase in convictions. License suspension or revocation actions were taken against 3 million drivers in 1974 - 60 percent more than in 1969. This increase began in 1973 and continued through 1974.

- Total driver licensing expenditures rose 36 percent from 1969 to 1974 - from $132 million to $180 million, averaging $1.44 per licensed driver in 1974, an increase over the 1969 rate of $1.22. Most of the increase is due to capital outlays for improved equipment, a higher activity cost (for warning letters, courses, group sessions) and more frequent driver reexamination.

- The declining use of Federal grant funds, from $7.9 million in 1969 to $2.4 million in 1974 reflects a number of decisions, among them more emphasis for other program areas and establishment of more realistic State license fees to cover actual costs.

Periodic Motor Vehicle Inspection

- Over 70 million vehicles, out of the 130 million registered, were inspected in annual, or semiannual inspection in 1974, an increase of 33 percent since 1969. Vehicle registrations increased 24 percent during this period.

- Rejection rates have remained relatively stable. About 30 percent fail the annual inspection, while 39 percent fail in States with semiannual inspection requirements.

- Inspection costs ranged from an estimated $83 to $95 million over the years, and include all government expenditures regardless of types of procedures used for inspection - except spot inspection - plus an estimated amount to reflect the cost to service stations licensed, in some States, to perform inspection.

- Federal funds in support of periodic motor vehicle inspection were used primarily for training inspectors and developing information systems. Amounts were one percent or less of total PMVI costs, and their use - though it cannot be verified - was probably limited to manpower training and data collection.

key statistics

KEY STATISTICS

EXPENDITURES

Amounts Include all NHTSA Standards and Program Areas Except Pupil Transportation and Accident Investigation and Reporting

	1969	1972	1973	1974
NATIONAL TOTAL (Billions of $)	2.9	3.4	3.5	3.4
FEDERAL, State and Community Grants under Sect. 402. (Millions of $)	79	75	75	61[1]
PERCENT FEDERAL OF TOTAL	2.7	2.2	2.1	1.8[1]

[1] 1974 amounts are low due to time lag in expending obligated funds.

KEY STATISTICS

POLICE TRAFFIC SERVICES

	1969	1972	1973	1974
EXPENDITURES — Federal, State, and Local (Millions of $)	2040	2360	2430	2370
TRAFFIC CITATIONS, Except Parking (Millions)	27	34	36	38
INVESTIGATED ACCIDENTS (Millions)	7.2	8.2	9.0	8.7
MANHOURS on TRAFFIC SERVICES (Millions)	247	287	295	317
CITATIONS for SERIOUS[1] TRAFFIC VIOLATIONS (Millions)	6.5	8.0	8.6	8.5

[1] Includes DWI, reckless driving, hit and run, driving while license is suspended or revoked, or other crash contributing violations.

KEY STATISTICS

ADJUDICATION

	1969	1972	1973	1974
EXPENDITURES, Federal, State, and Local, for Traffic Courts (Millions of $)	146	167	171	166
CONVICTIONS for Traffic Violations, Except Parking (Millions)	20	26	28	29
CONVICTIONS for Serious [1] Traffic Violations (Millions)	4.2	5.3	5.9	5.8
DISPOSITION TIME, Days (Average)				
ALL Traffic Cases	22	23	23	22
SERIOUS Traffic Cases	53	54	54	38

[1] See definition of "serious" under Police Traffic Services.

KEY STATISTICS

ALCOHOL

	1969	1972	1973	1974
EXPENDITURES, Federal, State, and Local for Alcohol Program Activities (Millions of $)[1]	10	15	16	17
ALCOHOL RELATED TRAFFIC ARRESTS (DWI) (Thousands)	560	880	1040	1130
BAC TESTS on ARRESTED VIOLATORS (Thousands)	390	680	800	870
CONVICTIONS for DWI (Thousands)	420	670	810	860
BACKGROUND INVESTIGATIONS[2] (Thousands)	330	640	720	760
MANDATORY REFERRALS for REHABILITATION (Thousands)	110	260	430	520

[1] Section 402 funds excluded.

[2] Includes BAC and prior arrests, diagnostic tests and medical checks, employment checks, family and subject interviews.

KEY STATISTICS

EMERGENCY MEDICAL SERVICES

	1969	1972	1973	1974
EXPENDITURES,[1] Federal, State and Local (Millions of $)	25	40	45	46
TRAFFIC RELATED AMBULANCE RESPONSES (Millions)	1.3	2.0	2.1	2.3
TOTAL AMBULANCE RESPONSES (Millions)	8.8	10.6	11.4	12.2
AMBULANCES (Thousands)	28	29	29	31
AMBULANCES in Communication with a Medical Facility (Thousands)	5.4	9.6	10.8	12.1
AMBULANCE SERVICES (Thousands)	17.9	17.4	17.0	16.8
ACTIVE AMBULANCE PERSONNEL (Thousands)	219	251	264	282
PERSONNEL with DOT or Equiv. 81 Hours Training (Thousands)	28	61	100	142

[1] Does not include private charitable contributions or volunteer personnel services.

KEY STATISTICS

TRAFFIC SAFETY EDUCATION

	1969	1972	1973	1974
EXPENDITURES, Federal, State, and Local - (Millions of $)	210	227	243	242
ELIGIBLE STUDENTS (Thousands)	3500	3600	3700	3700
STUDENTS TRAINED (Thousands)[1]	2500	3000	3200	3300
SIMULATOR	400	860	900	930
RANGE	290	480	540	560
EVASIVE MANEUVERS	28	64	64	66
ACTIVE INSTRUCTORS (Thousands)	42	49	51	54
INSTRUCTORS WITH 12 HOURS OF TRAINING (Thousands)	13	18	21	24

[1] 30 hours classroom and 6 hours behind the wheel

KEY STATISTICS

DRIVER LICENSING

	1969	1972	1973	1974
EXPENDITURES, Federal, State and Local (Millions of $)	132	172	183	180
LICENSED DRIVERS (Millions)	108	118	122	125
WARNING LETTERS (Millions)	.9	2.1	2.7	3.3
DRIVERS to IMPROVEMENT SCHOOLS (Thousands)	22	73	99	112
DRIVERS to GROUP DISCUSSIONS and THERAPY (Thousands)	140	270	280	320
HEARINGS (Thousands)	120	200	250	300
DRIVERS PLACED ON PROBATION (Millions)	2.1	1.8	2.3	3.0
DRIVERS WITH LICENSE SUSPENDED or REVOKED (Millions)	1.9	2.1	2.5	3.0

KEY STATISTICS

MOTOR VEHICLE INSPECTION

	1969	1972	1973	1974
EXPENDITURES, Federal, State and Local (Millions of $)	83	92	96	95
REGISTERED VEHICLES (Millions)	105	119	125	131
VEHICLES INSPECTED (Millions) • TOTAL	60	70	76	80
• SPOT INSPECTIONS	3	6	7	8
• ANNUAL INSPECTIONS	45	51	55	57
• SEMI-ANNUAL INSPECTIONS	12	13	14	15
TOTAL NO. of INSPECTIONS[1] (Millions)	74	92	98	102
TOTAL NO. of REJECTIONS (Millions)	23	26	29	28

[1] Includes approx. 10 percent reinspections.

the national highway safety cost

THE MEANING OF "COST"

As in the previous study, "Assessment of Selected State and Community Programs", published in October 1973, the term "cost" means the amount of money spent in obtaining the goods and services to carry out those highway safety programs covered by or related to the NHTSA administered safety standards.

Almost all the amounts presented in this report so far, and including those in this chapter, were obtained by scatistically projecting cost information collected in the 10 sample states. There are a few exceptions such as the Federal funds (Section 402) for which obligated amounts rather than expenditures are used in this chapter. A comparison of projected total expenditures, based on the sample States, with obligated amounts shows only a minor variation, and inasmuch as Federal funds are but a small portion of the total spent, the use of obligations in this chapter will have little, if any, effect.

All amounts are given in 1974 dollars - that is, previous years are corrected for inflation using the Consumer Price Index. Many of the numbers are rounded and totals may therefore not be precise.

THE NATIONAL COST

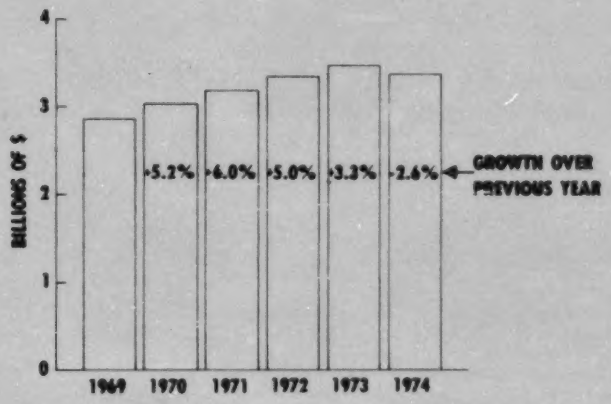
The trends examined here relate only to amounts of money spent, funding growth and the shifts that have taken place since 1969. From this we can gain some insight into the response by all levels of government to the problems in highway safety.

Over the six years 1969 through 1974, the real growth has been a cumulative 18 percent. On an annual basis this comes to between three and four percent. While the total amount spent has been increasing annually since 1969, except for 1974, there has been a steady decline in the amount of annual growth starting sometime in 1972. Figure 1 shows this trend. The actual decline of 2.6 percent from 1973 to 1974, while based on the information collected, should be viewed with some caution. It is possible that this drop reflects the recession, as well as the marked effect on the total by a small percentage decline in a heavily weighted cost area such as Police Traffic Services.

FIGURE 1

THE COST

ANNUAL EXPENDITURES IN 1974 DOLLARS
FEDERAL, STATE, AND LOCAL GOVERNMENT
- NHTSA PROGRAM AREAS -



The national expenditure for every licensed driver was $26 in 1969, rising gradually to $28 in 1971 and dropping back to $27 in 1974 - see Figure 2. The annual cost for every 10,000 vehicle miles driven remained relatively stable with only a $1 drop beginning in 1972. Both overall and unit cost trends, while not reflecting efficiency or productivity changes, show what could be a levelling off in highway safety spending. To be sure, this is only a very gross indicator of the highway safety effort and has to be judged along with other key factors.

FIGURE 2

UNIT COSTS

EXPENDITURE RATES, IN 1974 DOLLARS,
TOTAL – ALL LEVELS OF GOVERNMENT,
FOR NHTSA PROGRAM AREAS

	1969	1970	1971	1972	1973	1974
PER LICENSED DRIVER	26	27	28	28	28	27
PER 10,000 VEHICLE MILES	27	27	27	26	26	26

NOTE: VALUES ROUNDED TO NEAREST DOLLAR

THE COST BY PROGRAM AREA

Enforcement is by far the largest highway safety expense borne by government. Over $2 billion each year, or 70 percent of the cost of highway safety, pays the bill for police traffic services. Driver education is next with amounts approaching a quarter of a billion dollars in 1973 and 1974. Driver licensing and traffic courts each cost between $100 and $200 million a year. Vehicle inspection, vehicle registration, and traffic records cost about $100 million each.

The remaining areas, except for emergency medical services which is approaching the $50 million a year mark, cost less than $20 million per year. Figure 3 lists the amounts for the years 1969 through 1974.

FIGURE 3

PROGRAM COSTS

Annual Expenditures, in 1974 Dollars, for Each NHTSA Program Area (Federal, State, and Local Government)

Program Area	Millions of $ 1969	1970	1971	1972	1973	1974
Police Traffic Services	2040	2130	2250	2360	2430	2370
Driver Education	210	218	222	227	243	242
Driver Licensing	132	147	161	172	183	180
Traffic Courts	140	153	160	167	171	166
Motor Veh. Registration	110	117	124	132	131	122
Traffic Records	91	90	103	119	109	100
Periodic Motor Veh. Inspection	83	88	90	92	96	95
Emerg. Medical Services	25	29	34	40	45	46
Alcohol	10	11	13	15	16	17
Planning & Administration	7	9	11	13	16	17
Pedestrian Safety	4	5	6	7	8	9
Debris Hazard Control	4	5	5	5	6	7
Codes and Laws	2	2	2	3	2	2
Motorcycle Safety	0.8	0.9	0.9	1	1	1
Total	2860	3010	3190	3350	3460	3370

The larger cost programs closely parallel the national growth trend which, of course, they help shape. It is in some of the lower cost safety areas that one finds a significant upward trend in spending. Planning and Administration expenditures, for example, have more than doubled over the past six years. More is being spent on alcohol activities every year--from 10 million dollars in 1969 to 17 million in 1974. Expenditures for Emergency Medical Services have nearly doubled since 1969 and the amounts for pedestrian safety are increasing at the rate of a million dollars a year (see Figure 4).

All the costs in this chapter are what governments have spent. There are some exceptions to this, for example, in PMVI where costs include both government expenditures and inspection costs to licensed service stations. The costs used do not include private contributions for equipment and operations, or the value of volunteers' time in emergency medical services - although an estimate is provided in the chapter on EMS.

FIGURE 4

EXPENDITURE GROWTH SINCE 1969
FEDERAL, STATE, AND LOCAL GOVERNMENT

	TOTAL SINCE 1969	
	MILLIONS OF $	PERCENT
PLANNING & ADMINISTRATION	10	143
MOTOR VEH. INSPECTION	12	14
MOTOR VEH. REGISTRATION	12	11
MOTORCYCLE SAFETY	.2	25
DRIVER EDUCATION	32	15
DRIVER LICENSING	48	36
CODES AND LAWS	0	0
TRAFFIC COURTS	20	14
ALCOHOL	7	70
TRAFFIC RECORDS	9	10
EMERG. MEDICAL SERVICES	21	84
PEDESTRIAN SAFETY	5	125
POLICE TRAFFIC SERVICES	330	16
DEBRIS HAZARD CONTROL	3	75
TOTAL:	510	18

FUNDING BY GOVERNMENT LEVEL

The Federal portion, that is, the State and Community Grant under Section 402 of the Highway Safety Act of 1966, amounts to slightly over 2 percent

per year of the amount spent in those areas covered by the NHTSA safety standards. Local and State funding provides the remainder at a roughly 60-40 split, respectively.

The principal sources of revenue for State financing of traffic safety programs are gasoline and fuel taxes, motor carrier taxes, motor vehicle registrations and fees, motor vehicle inspections and operator license fees. These funds are allocated from general funds, agency earnings or special trust funds.

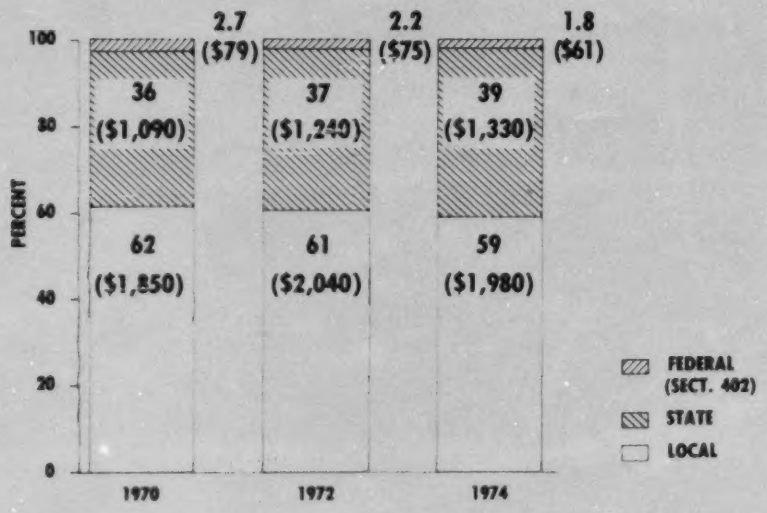
Counties and municipalities allocate funds for traffic safety projects from a number of sources, including a prorated return of monies collected in their jurisdictions for taxes, and licenses and fees, supplemented by revenue from real estate taxes, personal property taxes, fines and forfeitures and miscellaneous traffic assessments.

The trends show that States are shouldering an increasing share of funding while both the Federal and local portions are declining. Figure 5 shows the distribution for three years -- 1970, 1972 and 1974. The State and local shares are based on a sample of complete data in seven States. These trends are approximate, but in two of the highest expenditure programs we were able to get the State and local cost breakdown in each of the 10 sample States.

FIGURE 5

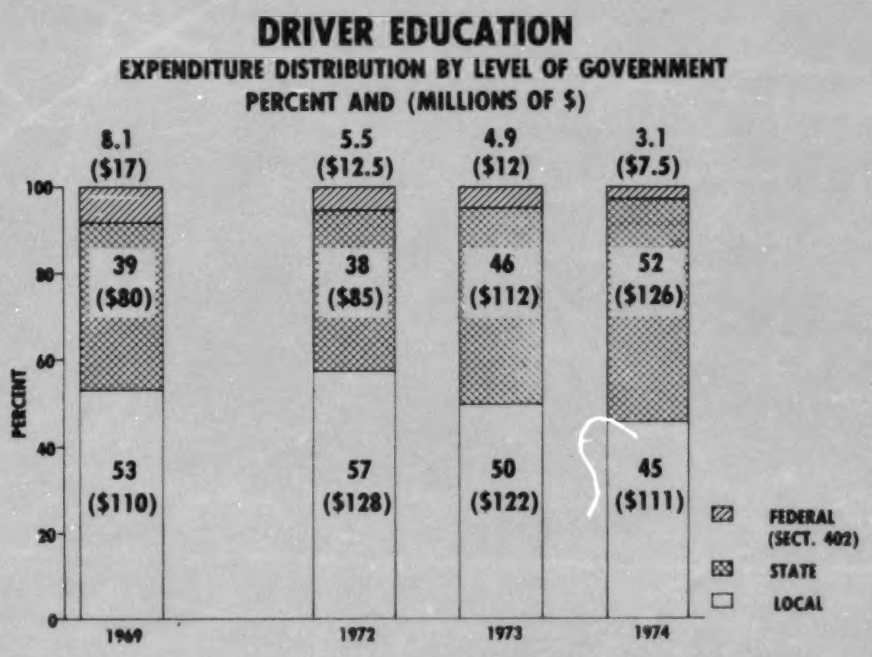
EXPENDITURE DISTRIBUTION BY LEVELS OF GOVERNMENT

PERCENT AND (MILLIONS OF $)



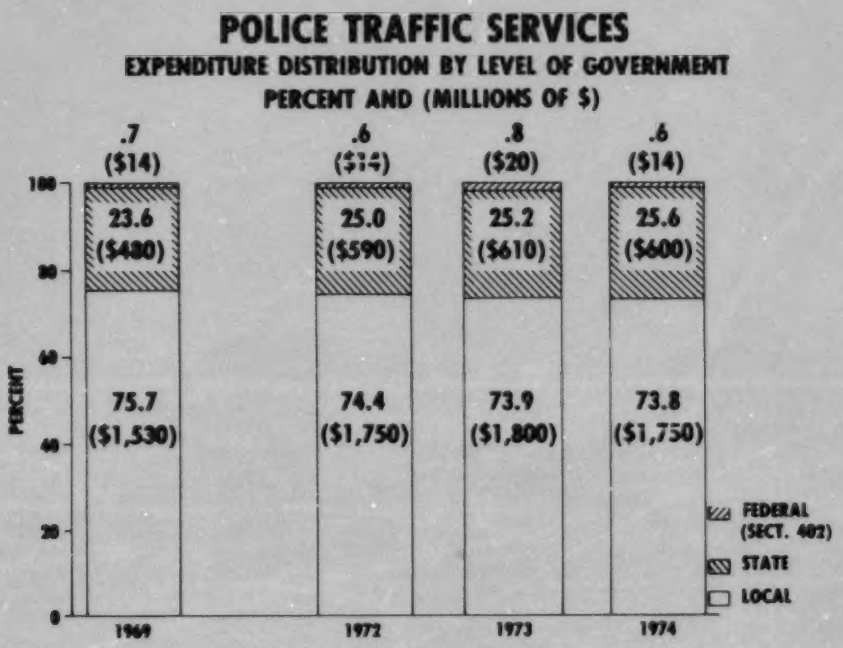
In Driver Education the trends are quite evident - see Figure 6. The Federal portion for this program began at slightly over 8 percent in 1969 and has dropped to around 3 percent in 1974. This is largely due to non-use of 402 funds for State reimbursement to school districts. In terms of 1974 dollars there has been more than a 50 percent increase in State funding since 1969, with a concurrent local funding decline.

FIGURE 6



Another example, although not as clear as that of driver education is the trend in funding for police traffic services. The State/local split runs approximately 25 to 74 percent respectively. There has been a 2 percent increase in State funding since 1969 and the local portion has declined by the same amount. Some of this decline is due to a larger local focus on crime, private and public security in general. Federal funds for police traffic services over the years have always been less than 1 percent of total expenditures (see Figure 7). The potential for leverage is therefore quite small.

FIGURE 7



FUNDING DISTRIBUTION BY PROGRAM AREA

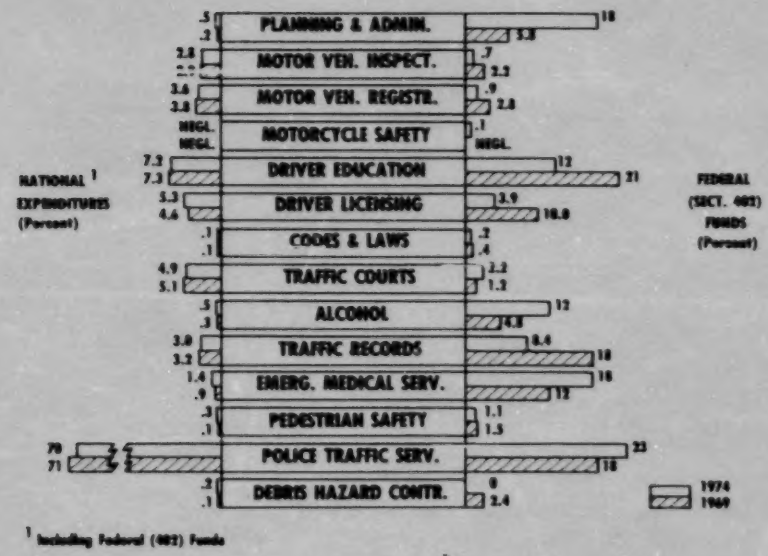
The proportion of funds for each program has in general remained relatively stable over the years. This is true in the large expenditure areas where for example 71 percent of the total was spent for police traffic services in 1969 and 70 percent in 1974 - see Figure 8. Among a number of the smaller expenditure areas the proportionate share did change - for example, funding for emergency medical services increased from .9 to 1.4 percent over six years.

FIGURE 8

DISTRIBUTION OF COSTS

NHTSA PROGRAM AREAS

1969 AND 1974



The distribution of Federal funds changed considerably over the past six years, reflecting for the most part the changing concentration of emphasis resulting from a better understanding of the problems and needs. The key shifts show increasing portions of Federal (402) funds going into Planning and Administration, Alcohol, Emergency Medical Services and Police Traffic Services. At the same time the major downward shifts are in Driver Education, Driver Licensing, and Traffic Records.

FEDERAL FUNDING LEVERAGE

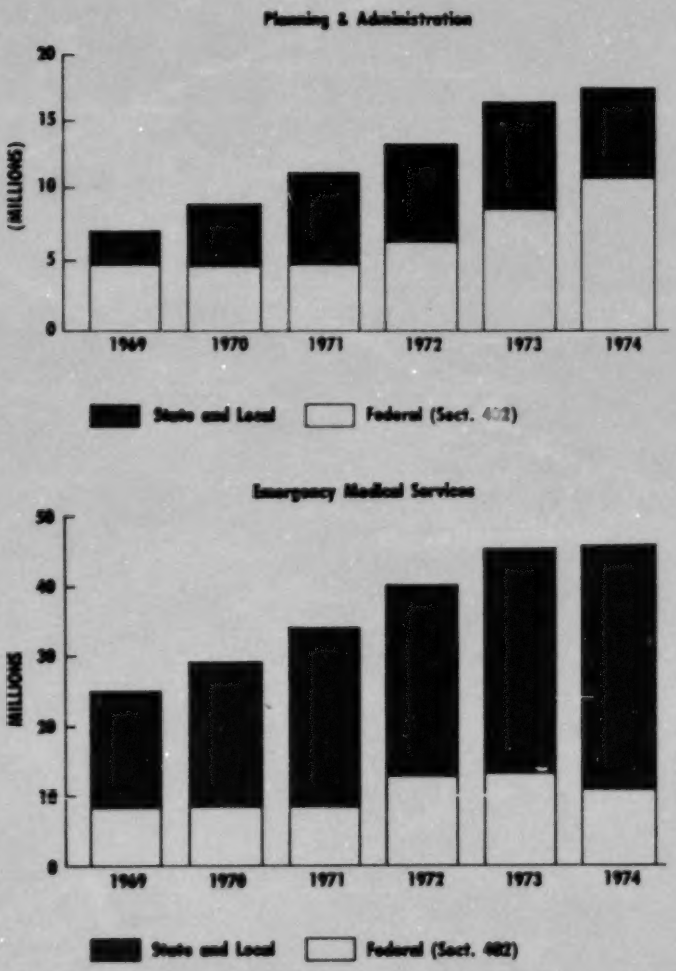
One useful measure of catalytic effects of Federal funding is to find out whether or not the States would put their money more heavily into a program area as a result of Federal emphasis. In analyzing the shifts in funding there is some evidence that this has happened in Planning and Administration and Emergency Medical Services. These examples range from a relatively low leverage situation to one where the State/local contribution increase has been substantial. This can be seen in Figure 9 where Federal funds paid for two-thirds of the national Planning and Administration costs in 1969. Thereafter the Federal portion has been 50 percent or less through 1973, although it approached two-thirds again in 1974. At the

same time the total amount spent for Planning and Administration has grown substantially - in terms of 1974 dollars - over the years. It is an example where there was some leverage when viewed from a national perspective.

FIGURE 9

KEY FUNDING CHANGES

1969 - 1974 Increases

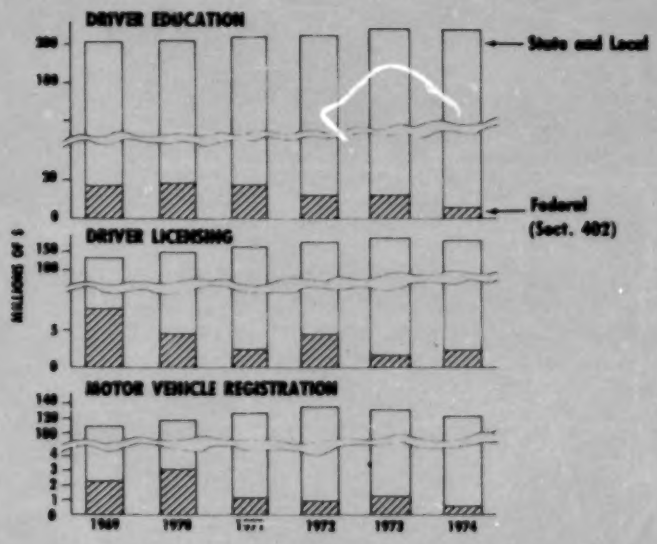


One of the larger leverage situations is in Emergency Medical Services, where in recent years the amounts spent by States and localities have been twice the Federal portion. The examples, it should be noted, are

in areas where the total amount of money spent is small compared to programs such as Police Traffic Services, Driver Education and Driver Licensing. As has been mentioned, the funding level for these latter areas has been relatively stable over the last six years with only small changes in growth. Figure 10 gives some examples which show decreasing proportions of Federal funding over time. The Federal amount in any event is extremely small and therefore limited to specific State and local activities, some of which are described in other chapters.

FIGURE 10

KEY FUNDING CHANGES
1969 - 1974
DECREASES IN FEDERAL (Sect. 402) CONTRIBUTIONS



SUMMARY

- Total highway safety expenditures, while growing through 1973, are leveling off in terms of 1974 dollars. The recession, energy shortages and resulting hard funding choices have had an impact on safety spending, leading to an apparent decline in 1974.

- Since 1969 the cumulative real growth for all NHTSA-related standard areas has amounted to $510 million, an increase of 18 percent, reaching $3.4 billion in 1974.

- Most large (over $100 million per year) programs have grown between 10 and 16 percent. In contrast, Planning and Administration, Emergency Medical Services and Pedestrian Safety have grown substantially - more than doubling - although together they account for less than 3 percent of nationwide highway safety expenditures.

- The State and Community grant, under Section 402 of the Highway Safety Act of 1966 amounts to slightly over 2 percent per year of total expenditures. For Police Traffic Services, Federal (Section 402) money contributes less than 1 percent. In some of the lower cost programs the Federal part is a great deal higher. In alcohol, for example, it has averaged 40 percent.

- States are shouldering an increasing share of funding - they are absorbing most of the growth, as local jurisdictions are more sensitive to the economy. In 1970 the split was 36 percent from State and 62 percent from local governments. By 1974 it was 39 percent to 59 percent. In 1974 dollars, State funding grew $240 million since 1969, while local government funding rose only $130 million during the same period.

- The national distribution of funds - that is, the allocated proportion of the total funds spent in each program - has remained relatively stable since 1969, except for some of the lesser cost areas mentioned previously. Enforcement consumes 70 percent of nationwide highway safety funds, or more than 10 times the amount spent for driver education, the next largest expenditure. Both have maintained their proportion of total national highway safety costs over the years.

- The Federal funding distribution has reflected emphasis policies by increasing the proportion for Planning and Administration (5.8 to 18 percent), Alcohol (4.8 to 12 percent), Emergency Medical Services (12 to 18 percent), Police Traffic Services (18 to 23 percent), and Traffic Courts. The decreases were in Driver Education (21 to 12 percent), Driver Licensing (10 to 3.9 percent) and Traffic Records (18 to 8.4 percent).

- Leverage from Federal funds is most apparent in Emergency Medical Services, Planning and Administration and to some degree in Traffic Records. In all of these areas the total amount spent over the years has grown, usually at a higher rate than the Federal input.

police traffic services and adjudication

The well-known role of police officers in traffic safety can be stated simply as one which helps keep traffic flowing under lawful conditions. What has to be done to fulfill this mission covers, perhaps, the broadest range of duties and certainly the most extensive human effort in traffic safety. In terms of people, equipment, facilities and consequent expense, police traffic services is the largest, by far, of all program areas.

In 1974, $2.4 billion was spent for this service, which paid for over 300 million manhours of traffic time (plus supporting equipment, vehicles and facilities), and yielded 38 million traffic citations, of which 77 percent resulted in convictions, and covered the investigation of almost 9 million accidents.

To describe the nationwide activities and outputs of both the traffic enforcement and adjudication efforts, this chapter is organized as follows:

- Police and Traffic Services: This covers the nature and size of the police force, how it is deployed for traffic enforcement, its training of recruits and costs.
- The Enforcement Activity: The results of activities as measured by traffic citations and the accidents investigated, are presented in this section. Related efforts such as selective traffic enforcement are also covered.
- Adjudication: This is a presentation and discussion of conviction data, disposition time and repeat violators, including problems of data and information availability.
- The Impact of Federal Funds: The use of these monies by police forces and their value to traffic enforcement is briefly analyzed.

POLICE AND TRAFFIC SERVICES

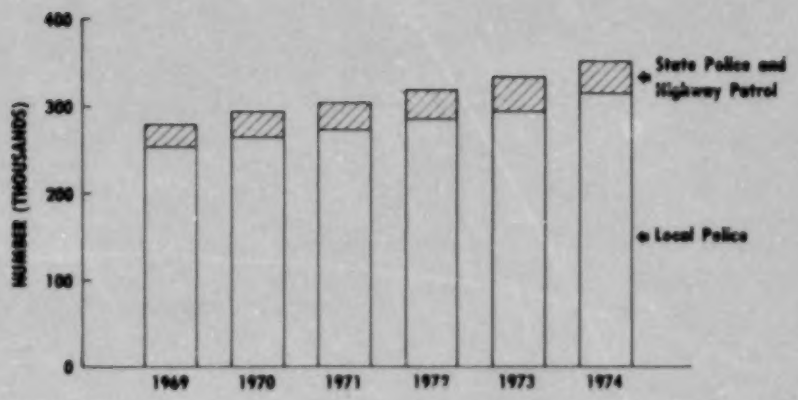
In 1974 there were over 350,000 uniformed law enforcement officers in the United States, a number which has grown 25 percent since 1969. For the purposes of this Assessment, sworn-uniformed officers in two governmental

levels of enforcement agencies are discussed, namely, State Police/Highway Patrol and local police. The latter includes organizations in cities, towns and counties. Figure 1 shows the size of these forces and their growth over the past six years.

FIGURE 1

POLICE OFFICERS

State Police, Highway Patrol, Local



The amount of time spent on traffic enforcement (traffic patrol, traffic law enforcement, traffic direction and control, accident investigation, administration, and other traffic related duties) has climbed over the years to better than 300 million manhours nationally in 1974. This represents 47 percent of the total police manhours available - a proportion which has remained almost constant over the last six years. This percentage was, in most cases, based on estimates by State and local police officials, and may include a certain amount of general patrol time not easily identified as either crime enforcement or traffic patrol.

When these statistics are analyzed separately for State Police/Highway Patrol and local police, a different trend emerges. Local police manhours for traffic enforcement have increased significantly since 1969 (34 percent), in fact more than the increase in total local police manhours (26 percent). Figure 2 highlights these comparisions.

FIGURE 2

POLICE MANHOUR TRENDS

Total Police	1969	1974	% Growth
Total Manhours (Millions)	543	673	+24
Traffic Manhours (Millions)	247	317	+28
Percent Manhours on Traffic: 47% Avg.			

State Police & Highway Patrol	1969	1974	% Growth
Total Manhours (Millions)	64	69	+8
Traffic Manhours (Millions)	48	51	+6
Percent Manhours on Traffic: 74% Avg.			

Local Police	1969	1974	% Growth
Total Manhours	479	604	+26
Traffic Manhours	199	266	+34
Percent Manhours on Traffic: 42% Avg.			

Many of the manhour changes must be viewed from the standpoint of the scope of the enforcement problem. For the traffic situation this is usually associated with the number of drivers, vehicles, miles driven and roadway miles.

Enforcement Manpower and the Traffic Load

Since 1969 there has been a 20 percent increase in the number of miles driven which through 1974,represents an average annual increase of 4 percent. Despite the effect of the energy crisis, drivers in 1974 travelled an estimated 1275 billion vehicle miles. All other aspects of driving have also been climbing since 1969 - the number of licensed drivers (up 16 percent), the number of registered vehicles (up 24 percent) and miles of roadway (up 3 percent).

Two key measures of traffic enforcement effort are shown in Figure 3. They indicate, in a gross sense, that over the past six years, the amount of time devoted to traffic by all police agencies has kept up with potential problems - accidents, traffic flow in terms of vehicles and drivers. There has been a slight increase in the proportion of traffic manhours per 1000 licensed drivers and per one million vehicles miles in 1974 which in the latter case is due to the energy crunch driving pattern.

FIGURE 3

TRAFFIC MANHOUR RATES

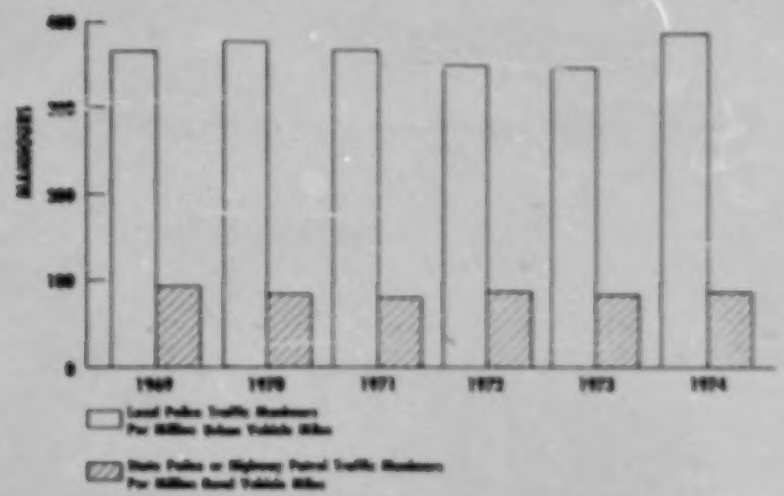
	1969	1970	1971	1972	1973	1974
Traffic Manhours Per 1000 Licensed Drivers	2300	2400	2400	2400	2400	2500
Traffic Manhours Per Million Vehicle Miles	230	235	230	230	230	250

When the manhour/mileage rates are broken down for the State Police/ Highway Patrol and the local police - based on the driving environment patrolled by each of them - the results are as shown in Figure 4.

FIGURE 4

STATE/LOCAL ENFORCEMENT EFFORT

Traffic Manhours/Million Vehicle Miles

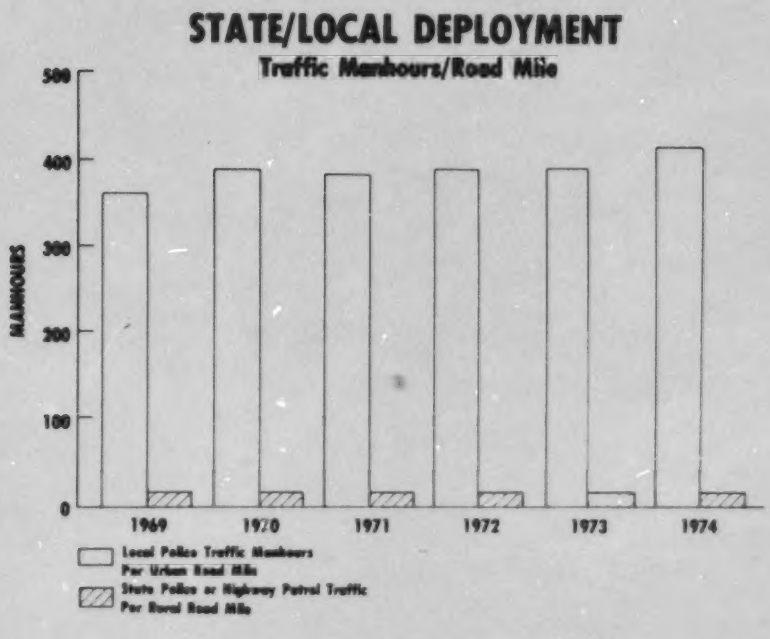


Although urban vehicle mileage is approximately equal to rural road miles travelled, it should be noted that local police spend 400 traffic manhours per year for each million vehicle miles driven in urban areas, while the State Police/Highway Patrol, with a substantially smaller force, can

only muster 100 traffic man hours per million rural vehicle miles, often traversed at more dangerous speeds.

Much the same results are obtained when using road mileage instead of vehicle miles, as illustrated in Figure 5.

FIGURE 5



Traffic Training for Recruits

As part of police training programs, the number of hours a recruit spends on traffic courses can both affect his ability in this field and give an indication of emphasis by the police agency, to a duty which consumes almost half of a patrol officer's time.

On the basis of data gathered and projected there is a considerable difference between training time for traffic enforcement by State Police/Highway Patrols and local police organizations. While it is true that the State level traffic enforcement effort constitutes 75 percent of all their manhours as against 43 percent for local police, traffic training for the State people is 10 times more than for the local police. Trends of training hours for traffic follow a similar pattern as shown in Figure 6.

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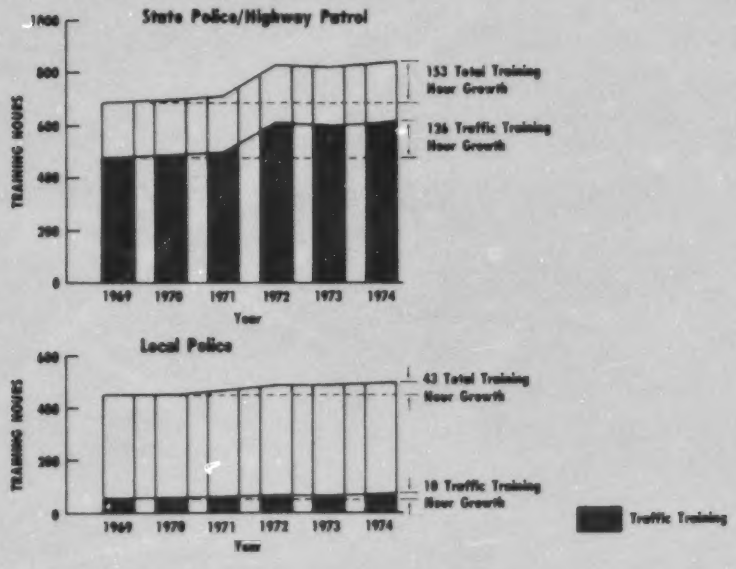
FIGURE 6

RECRUIT TRAINING

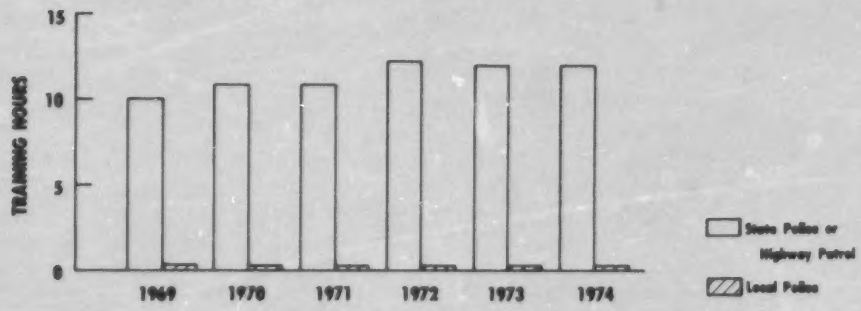


If recruit training for traffic enforcement is to bear some relationship to the amount of duty hours on traffic, the rates in Figure 6 do not support this. Another comparison is shown in Figure 7, where recruit training per million manhours on traffic is considerably higher for State level police agencies - and increasing slightly since 1969. As in the discussion on manhours per vehicle mile in a previous section, police forces are maintaining a traffic training program which in terms of hours spent on traffic courses, has grown over the last six years. Local emphasis on crime of all kinds, particularly violent crime and the drug problem has placed training in these areas at a premium.

FIGURE 7

RECRUIT TRAFFIC TRAINING EMPHASIS AT STATE AND LOCAL LEVELS

(Per Million Manhours on Traffic)



Traffic Enforcement Cost

It is useful at this point to present what it costs to have a police officer on traffic duty for one hour. The dollar rates shown in Figure 8 include the manpower, vehicles, equipment, communications and facilities to complete one traffic-duty hour.

The dollar per traffic-duty hour is an adjusted value - corrected for inflation, and as such shows little change over the six-year period. Some of the economic pressures of 1974 appear to have brought the local police cost down that year.

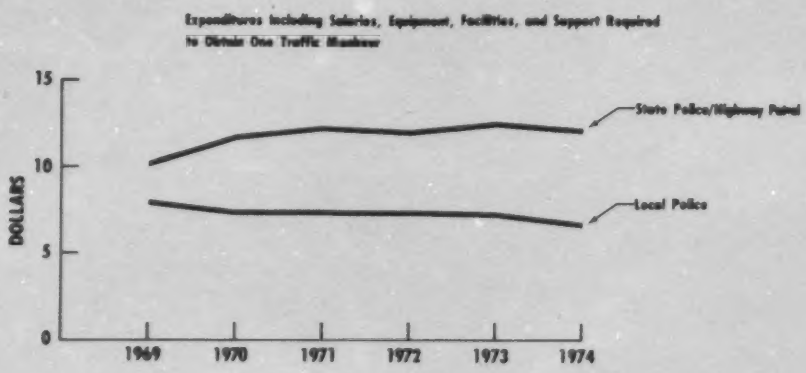
The difference between State and local level costs per traffic enforcement hour reflects the lower average salaries paid to local police. One must take into account that the more than 8 thousand local police agencies employ 90 percent of police officers nationwide and include such traffic related duties as parking meter patrols, cadets, and part-time crossing guards.

FIGURE 8

COST OF ENFORCEMENT

Average Expenditure Per Manhour On Traffic

1974 Dollars



ENFORCEMENT ACTIVITY

The immediate results of traffic duty - that can be measured - are the number of citations issued and the number of accidents investigated. A subsequent measure are convictions for violations, including those cited after an accident has been investigated. This section will present these activity or performance indicators together with some findings on the use of selective enforcement by police organizations.

Citations

Data was collected on citations issued for all traffic violations, except parking. Most police agencies use the term "hazardous moving" violations or citations which applies to about three quarters of all citations (again, except parking). For this Assessment a more selective category was defined, namely - serious violation citations, which includes DWI, reckless driving, hit-and-run, violations cited in connection with an accident, driving with a suspended or revoked license and felonies committed with an automobile.

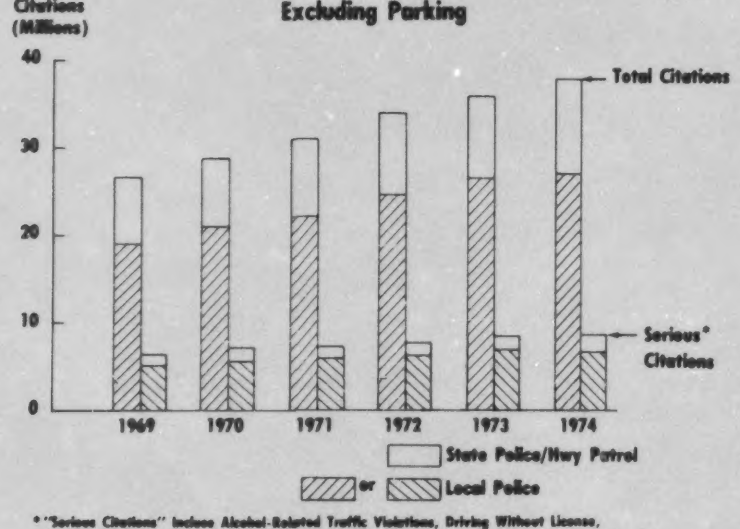
The majority of citations that make up the difference between "serious" and "hazardous" are for speeding. Speeding tickets, without a proper analysis, may represent a considerable range of potential hazard - anything from relatively small deviations above (or below) the speed limit to high speed and therefore reckless driving. The "serious" citation list is often used by insurance companies to categorize risk.

Some 38 million citations for all traffic violations excluding parking were issued in 1974, a dramatic increase since 1969 when the total was 27 million. This growth of 42 percent over six years represents a steady annual climb. Citations for serious violations account for about one fourth of the total, but have not increased as fast as the total. The chapter on Alcohol, which follows, discusses in more detail the trends in DWI but it can be surmised that certain types of serious violations may have levelled off - or that enforcement activity has concentrated more toward speeding. Figures 9 and 10 portray the trends.

FIGURE 9

CITATIONS

Excluding Parking



*"Serious Citations" Include Alcohol-Related Traffic Violations, Driving Without License, Felony With Auto, Hit and Run, and Accident Citations

FIGURE 10

CITATION TRENDS

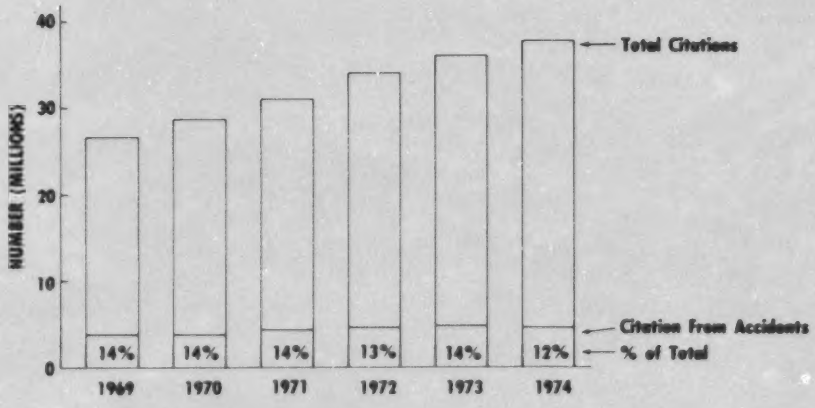
	1969	1970	1971	1972	1973	1974
TOTAL CITATIONS (MILLIONS)	27	29	31	34	36	38
State Police/Hwy Patrol	8	8	9	9	10	11
Local Police	19	21	22	25	27	27
TOTAL SERIOUS CITATIONS (MILLIONS)	7	7	8	8	9	9
State Police/Hwy Patrol	2	2	2	2	2	2
Local Police	5	5	6	6	7	7

All citations, except those as a result of an accident investigation, are issued on the basis of observing a violation in progress. Citations from accident investigations - by definition included under the "serious" category - remained at a relatively even level - see Figure 11.

FIGURE 11

ACCIDENT CITATIONS

Percent of Total Citations Resulting From Investigated Accidents



These results point to some enforcement trends in recent years. Except perhaps for DWI, the kinds of violators receiving increased attention

are speeders. This can be inferred from limited data collected during the Assessement plus the fact that speeding citations account for most of the difference between the "serious" and "total" number of citations, and this difference has increased substantially since 1969. The most recent emphasis on 55 mile per hour speed limits has no doubt given added impetus to speed enforcement.

The question of whether or not the degree of enforcement activity has reflected the increase in traffic can best be analyzed in terms of the number of licensed drivers and vehicle miles travelled which are most closely related to citations resulting from violations and accidents. The rates shown in Figures 12 and 13 depict the trends for 1969 through 1974. The fact that both rates have increased over the years is a sign of tighter enforcement - although our "serious" group does not follow that trend for reasons mentioned earlier.

FIGURE 12

CITATIONS PER 1000 LICENSED DRIVERS

Excludes Parking

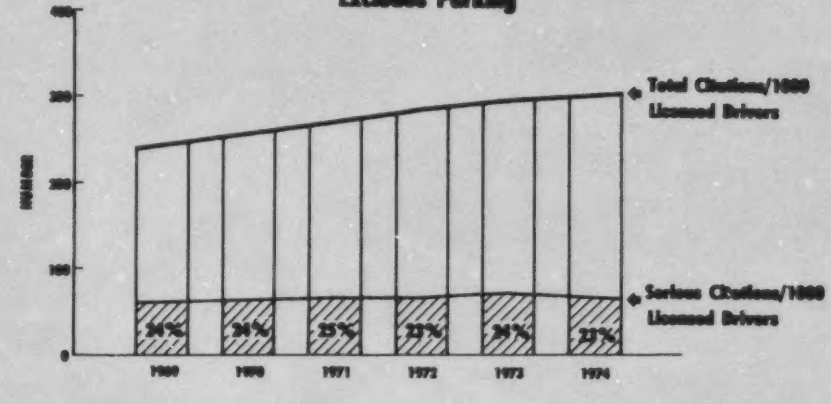
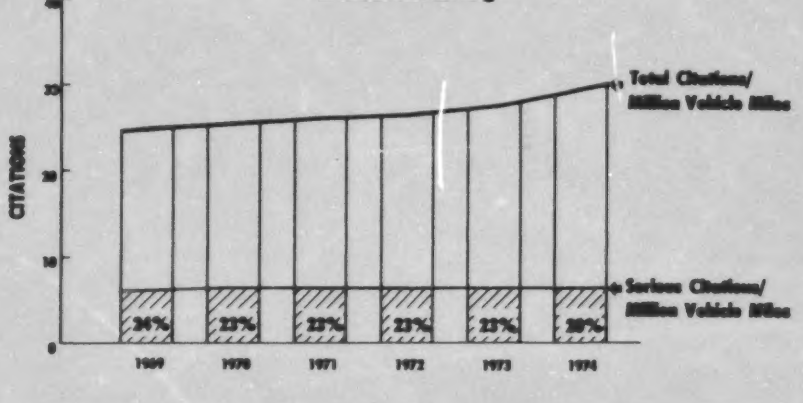


FIGURE 13

CITATIONS PER MILLION VEHICLE MILES

Excludes Parking

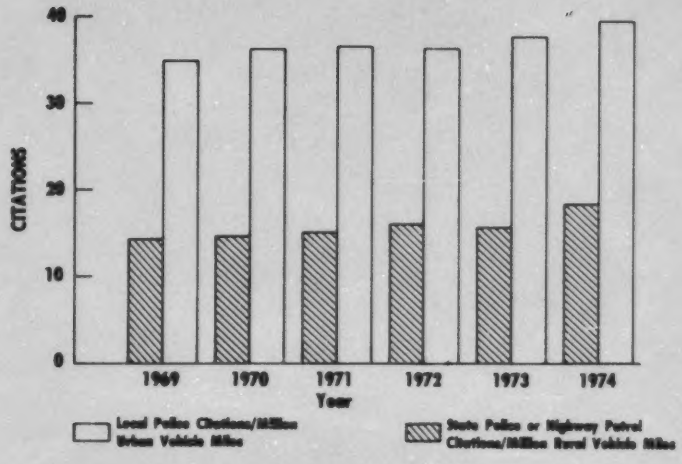


A driver has a better chance today of being cited for a violation than six years ago. On the average one out of every three drivers is ticketed each year. The true number of drivers ticketed is, however, somewhat lower since repeat violators, who account for 12 to 14 percent of all convicted drivers, were not included.

Both State Police/Highway Patrol and local police enforcement activities have increased slightly when analyzed on the basis of citations per rural and urban vehicle miles travelled - see Figure 14. In all cases this rate shows the effect of reduced travel due to the energy shortage in 1974.

FIGURE 14

STATE AND LOCAL CITATIONS
- VEHICLE MILEAGE RATES -
(Excludes Parking)



Accident Investigation

In 1974, 8.7 million of the 17 million accidents were investigated by the police. In about half the cases violations were found and citations issued. As might be expected over 80 percent of the investigations are carried out by city and town police since most accidents occur in urban or urbanized areas.

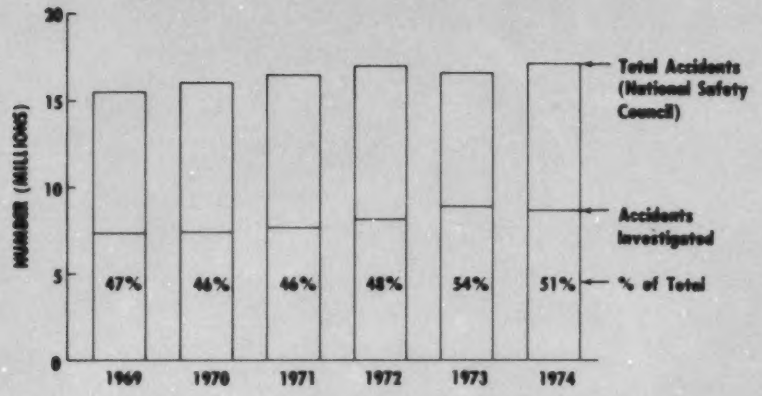
It was found that the State Police/Highway Patrol are called in to investigate accidents in smaller communities where police forces are very small and not equipped for accident investigation. The practice varies considerably by locality.

Over the six-year period, as shown in Figure 15, the proportion of accidents investigated has risen slightly, when the National Safety Council's figures for the total number of accidents are used. Here, as in the case of citations, enforcement activity has kept pace with the traffic and accident trend.

FIGURE 15

ACCIDENTS INVESTIGATED

Percent of Motor Vehicle Accidents Investigated By Police Officers



Forty-four States now use a standard report form. In 41 of those States, instruction is provided to local agencies in the use of the accident reports.

Enforcement Productivity

Productivity - a popular subject for those concerned with work accomplished per wage dollar - is a difficult thing to measure when it comes to traffic law enforcement. For purposes of this Assessment a typical (in many departments nowadays) 10 hour patrol shift, or 50 hour patrol week is used. It is further assumed that all 50 hours are spent on traffic or related duty. With this premise we can quickly calculate the number of 50-hour weeks worked from total number of manhours spent on traffic.

In Figures 16 and 17 citations issued and accidents investigated by one police officer during a 50 hour traffic patrol week are shown both for local and State agency enforcement.

FIGURE 16

CITATION FREQUENCY

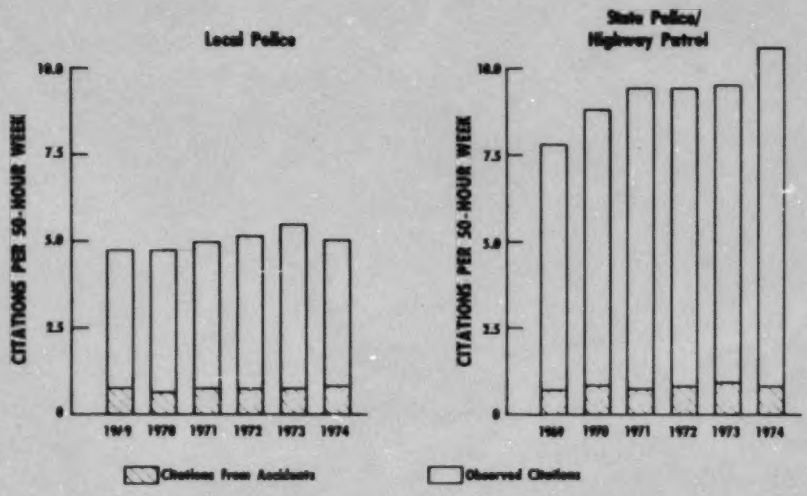
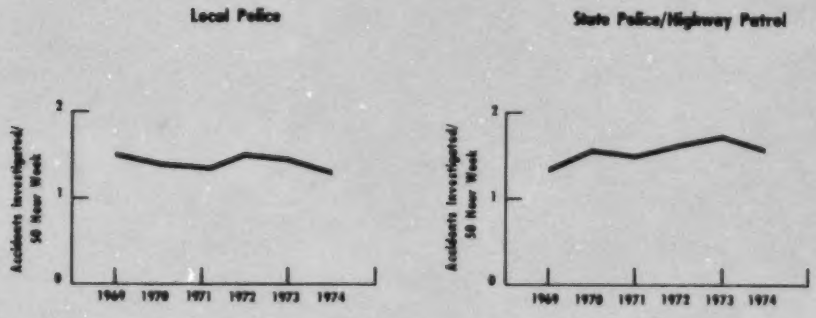


FIGURE 17

ACCIDENT INVESTIGATION FREQUENCY



Recognizing that both measures are but general indications of productivity - a lot of police time is spent in court, writing reports, directing traffic - the trend, at least through 1973 is up, meaning more citations per work week were being issued each year. In urban areas, local police have begun to use violation warnings in certain cases, and though there are no data available, this was emphasized by a number of local police agencies interviewed. The use of warnings could account for an apparent drop in the number of citations issued (see Figure 16) in 1974. State agency enforce-

ment productivity rose in 1974 primarily as more speed control was put into effect on State roads.

Each police officer - on our typical 50-hour traffic patrol - investigates an average of one or two accidents a week. Again the trend suggests a fairly steady level of activity over the years.

Selective Traffic Enforcement

One of the major demonstration project areas in police traffic services that NHTSA has pursued over the years is selective traffic enforcement. It has been thought that effective countermeasures using selective traffic enforcement techniques can result in reduced accidents. The analytic thrust of this phase of the survey was to determine the degree to which police departments could practice this operational strategy known as "Selective Enforcement". In the highway safety field, this term normally means the deployment of police manpower and equipment resources to concentrate on high accident locations and times of day and week, and accident-causative traffic violations.

As a basis for determining whether a police department has the potentiality for selective enforcement according to this definition, the Assessment determined whether these departments are maintaining the necessary information for planning and implementing selective enforcement. This permits a uniform judgment about each police department regardless of whether or not that particular department actually practices true Selective Enforcement.

Figure 18 which follows, presents the estimated percent of U.S. cities and towns (with population of 2500 or more) that have the data to determine when accidents are occurring, when police strength on the street is at various levels, and the times of each day and week when prevalent accident-causative violations are being cited by police. In particular, the figures indicate the degree to which police departments have the data to discern within the patterns of their overall citation program, the frequency with which they detect and cite the greatest accident-causative violations. This provides the capability to pinpoint which violations are more likely to cause an accident, and to do so within various parameters of operational time.

FIGURE 18

SELECTIVE ENFORCEMENT POTENTIAL

Local Police Trends: Their Ability to Evaluate When

- **Accidents Rise**
- **Traffic Enforcement Is Up**
- **Accident-Causative Violations Are Cited**

Percent of U.S. Jurisdictions (Population 2500 or More)

Maintaining the Necessary Information (By Time of Day, Day of Week)

Type of Record:	1969	1970	1971	1972	1973	1974
Accident Occurrences	39	39	34	39	40	39
Police Manhours on Traffic Services	19	19	19	21	22	23
Type & Frequency of All Citations	53	53	53	57	57	57
Type & Frequency of Violations Causing Accidents	33	33	33	34	34	34

Figure 19 depicts the percent of U.S. towns and cities with police departments able to determine where accidents and their causative violations are occurring. This also indicates the percent of U.S. jurisdictions where police can match patrol manhours with their overall citations, and in turn learn whether manning strength in patterns of operations are correctly geared to accident-causative violations in terms of the places where they are most likely to be occurring.

Neither of these charts indicates any significant increase in the percent of jurisdictions with the necessary capability for selective enforcement. While there is some increase between the three-year period 1969-1971, and 1972-1974, only a gradual increase in police capability can be inferred.

FIGURE 19

SELECTIVE ENFORCEMENT POTENTIAL

Local Police Trends: Their Ability to Evaluate Where

- **Traffic and Patrol Divisions are Deployed**
- **Accident-Causative Violations Occur**

Percent of U.S. Jurisdictions (Population 2500 or More)

Maintaining the Necessary Information (By Patrol Shifts and Beats)

Type of Record:	1969	1970	1971	1972	1973	1974
Accident Occurrences (& Their Causative Violations)	41	41	41	45	45	45
Police Manhours on Traffic Services	33	33	33	36	36	36
Vehicle-Unit Hours on Traffic Services	25	25	25	28	28	28
Type and Frequency of All Citations	34	34	34	40	38	38

The Cost of a Citation

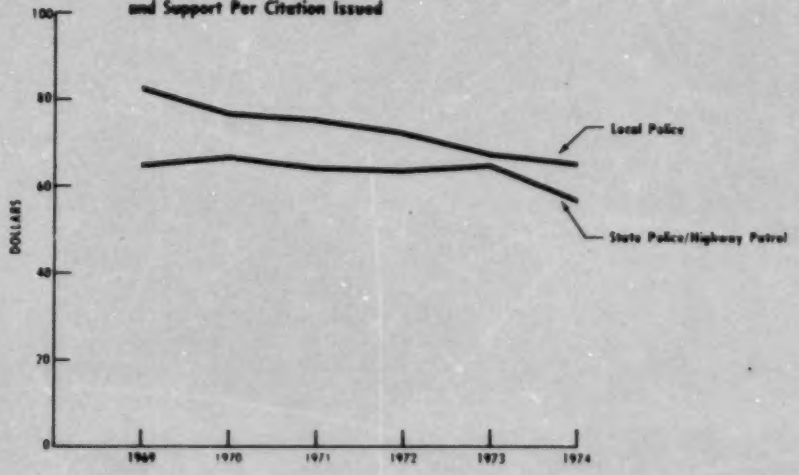
The cost per citation is declining for both local and State traffic enforcement activity. (See Figure 20.) The difference between the two trends reflects the wider range of traffic duties handled by local police and the more limited periods of time available for observing violations - hence a higher "cost per unit".

FIGURE 20

EXPENDITURES PER CITATION

1974 Dollars

Total Government Expenditures Including Salaries, Equipment, Facilities, and Support Per Citation Issued



There is, however, a definite trend toward increased cost effectiveness - minor fluctuations not withstanding - possibly reflecting improved efficiencies as well as emphasis on apprehending violators. This may also reflect the emphasis on specialization and improved enforcement techniques developed and promulgated by various leadership groups such as the International Association of Chiefs of Police.

ADJUDICATION OF TRAFFIC VIOLATIONS

Law enforcement includes citing traffic violations and convicting offenders. This requires cooperative effort between the police department and the court. If the police work is not adequate, for example, citations are issued for the wrong violations, then the courts are overloaded with cases that are not going to result in convictions. In addition people receiving tickets get off easier and the public may decide that law enforcement is not effective. On the other hand lenient courts that do not convict violators when they should, tend to discourage police officers from issuing citations.

Convictions in Traffic Cases

The Assessment surveyed courts and police departments in 105 sample sites in order to ascertain to what degree police citations for traffic violations lead to court convictions. The overall conviction rate is 77 percent and has been constant over the six-year period examined.

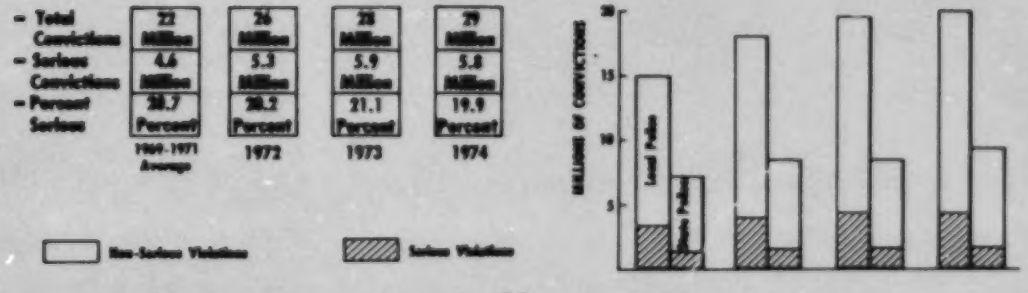
In 1974, 38 million citations yielded 29 million convictions, paralleling a trend since 1969. Figure 21 provides more of the specifics for the six years.

FIGURE 21

CONVICTIONS FOR TRAFFIC VIOLATIONS

1969 to 1974 Trends for

- **Convictions for Serious vs. Non-Serious Violations**
- **Convictions Arising From Local and State Police/Highway Patrol Citations**



Twenty percent of all convictions were for serious violations - those involving DWI, reckless driving, citations arising from accidents, driving with suspended licenses etc. - which were discussed in a previous section. Serious violations tend to yield a lower conviction rate than total cited violations, since these types of cases almost always end up in more involved court proceedings. Conviction rates for serious violations have, however, been increasing - see Figure 22, albeit gradually, since 1969.

FIGURE 22

TRAFFIC CONVICTION RATES

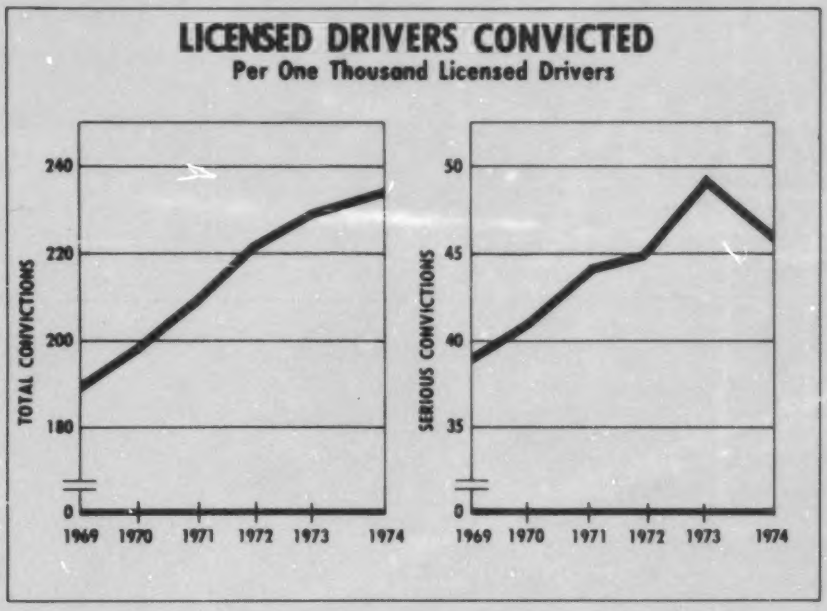
Trends in Court Conviction of Traffic Citations Issued by Local Police Departments and State Police/Highway Patrols

	Percent Convicted			
	1969-1971 Average	1972	1973	1974
Traffic Citations Issued By All Police				
• For All Violations	77	77	77	77
• For Serious Violations	66	67	68	68
Traffic Citations Issued By Local Police				
• For All Violations	72	73	74	73
• For Serious Violations	59	61	62	62
Traffic Citations Issued By State Police/Highway Patrol				
• For All Violations	89	88	88	87
• For Serious Violations	92	92	92	90

Conviction rates for citations issued by State police agencies are quite a bit higher than those from local traffic enforcement officers. Some of these differences are due to a selectivity in citing violations, and better case preparation by State agencies - due primarily to fewer citations issued overall and more time spent on traffic enforcement in relation to the local police effort as well as better detection methods, particularly for speeding, and more traffic training. The very large local docket and less rigid court and administrative procedures may account for the results. Yet it should be pointed out that conviction rates in local jurisdictions for serious violations have been increasing gradually.

Just as the chances of a driver being cited for a violation have been increasing, so are his chances of being convicted. A gross indicator is shown in Figure 23, which relates convictions to the driving population.

FIGURE 23



Quite apparent is the drop in serious violation convictions (per 1000 licensed drivers) in 1974. This decline first appeared in the data in Figure 21 and is more pronounced here despite previous statements of a slight improvement in conviction rates notably through 1973. The only explanation is the recent higher concentration on speeders and a concurrent decline in pursuing some of the more time consuming efforts to apprehend drivers under suspension.

Traffic Case Disposition Time and Repeat Violators

In the Assessment, we established two measures of performance for indication of trends in judicial disposition of traffic violations. The first measure consists of the "average disposition time" measured in days, that an average traffic violation takes to be completely adjudicated by the court. The second measure is the number of repeat violators who receive more than one traffic ticket in any twelve-month period.

The national estimate of the total number of days for final disposition of traffic violations is as follows:

- All Traffic violations as a group averaged 23 days in the disposition process.

- The non-serious types of traffic violations required 16 days.
- Serious violations required 54 days.

Disposition time is measured from the date the police officer writes a traffic citation until the date of final court action. These estimates of judicial disposition days take into account any continuances the defendants' attroneys request in more serious cases. We did not discern any significant changes over the six-year period in the disposition in any of the three groups of traffic violations being measured, despite a sizeable increase in court caseload.

Difficulty was experienced in developing data for the "repeat violators". Although the concept of this measure is potentially useful, the ability to obtain data on repeat violators is hampered substantially by the manner in which court records are normally maintained. Court dockets are usually set up by a calendar of court session days, and consistant with the "rules of evidence," no indication is given on each defendant regarding prior convictions in that court or others. Lacking firm repeat violation data from the majority of the courts sampled, estimates of repeat violators were constructed using court filings and various court officials' estimates of the average percent of annual conviction levels attributable to repeat violators. The resulting national estimate is that repeat violators accounted for approximately 12 to 14 percent of the total convictions occurring in the courts from 1969 to 1974.

IMPACT OF FEDERAL FUNDS

Federal funds (Sect. 402) allocated to PTS represent less than one percent of total nationwide expenditures for police traffic services over the six-year period. What was actually bought with Federal funds is described in a report completed in October 1973 covering six years (1968 through 1973). About two-thirds of these funds helped buy equipment and vehicles, particularly speed detection devices and police cars for special projects such as Selective Enforcement. The remaining amounts went for training and some overtime pay, the latter incident to certain emphasis efforts in DWI detection.

The total national expenditure for traffic enforcement reflects the large manpower budget estimated at between 75 and 80 percent of the total cost, or nearly $2 billion in 1974. The $300 to $500 million remaining goes to equipment, training, facilities and vehicles of which the Federal portion is $15 to 20 million per year or about 5 percent. To detect specific impact, even in terms of the indicators in this Assessment, remains a continuing objective and underlines a need for prudent, and concentrated use of such funds.

Not included in this Assessment are the funds expended for demonstration projects ($5.7 million in 403 funds for 1972 through 1974 and $11 million in 402 funds for 1973). Also the Law Enforcement Assistance Administration of the Justice Department has funded many special projects; but how much of the LEAA funds go to support traffic related projects is unknown.

KEY TRAFFIC ENFORCEMENT FINDINGS

- Growth in traffic enforcement services in the nation has kept pace with or exceeded the growth trends in major highway safety areas of concern: vehicle miles of travel, licensed driver population, number of registered vehicles, and miles of urban and rural roadway.

- 350 thousand State and local sworn-uniformed police officers provide overall law enforcement in the 50 States and District of Columbia, and 47 percent of their enforcement hours are spent on traffic services. This represented 300 million hours of traffic enforcement in 1974, a 28 percent growth over 1969 operations.

- The surge in traffic enforcement comes essentially from growth in local police traffic services. Local police time on traffic has increased 34 percent since 1969 versus a smaller growth of 26 percent in their total law enforcement efforts.

- Local police -- with 90 percent of the officers in the U.S. -- annually spend 400 traffic service hours for each one million vehicle miles of urban travel. State police and highway patrols spend 100 hours per million miles of rural travel. Compared against vehicle miles of travel, as well as operational time versus miles of roadway, traffic service hours are increasing at a faster rate.

- Emphasis on traffic service training directly affects the quality of traffic work in the field, and suggests the level of emphasis police departments place on traffic enforcement. Traffic training varies greatly between State and local police agencies. In 1974, State police and highway patrols spent five out of six training hours on traffic enforcement compared with one out of six for local police.

- Recruits for state police and highway patrols received 10 times the traffic training hours that local police recruits underwent. This gap continues despite increased field time on traffic surveillance by local police. Since 1969, eighty percent of all increases in training hours for state police concerned traffic

enforcement versus 25 percent of the expanded training for local police.

- In 1974, the 300 million hours of traffic services (with supporting equipment) cost $2.4 billion. Translated into an average traffic-duty hour cost, only moderate changes occurred over the 1969-1974 period. For state police and highway patrols, cost per traffic-duty hour rose from $10 to $12. Costs for local police dropped from $8 to $7. The lower cost for local police reflects their lower average salaries.

- Intensified traffic enforcement produced a 42 percent increase in total citations issued during the six-year period -- from 27 million citations (excluding parking) in 1969 to 38 million in 1974. Citations for more serious violations (alcohol traffic offenses, reckless driving, driving with suspended license, etc.) accounted for one-quarter of total citations but increased at half the rate of total citations -- from 7 million in 1969 to 9 million in 1974.

- Local police wrote 27 million of the 38 million total citations in 1974, an increase of 47 percent since 1969. Simultaneously, state police and highway patrol citations rose by 38 percent -- reaching a level of 11 million in 1974. Growth in the serious portion of total citations is attributable solely to local police efforts. Local police serious citations grew from 5 to 7 million over the six years, while serious citations by state police remained level at 2 million annually the entire period.

- Measured against driver population and vehicle travel factors, enforcement against drivers has tightened since 1969. Total citations per 1000 licensed drivers increased from 240 in 1969 to 300 in 1974. Measured against vehicle travel, citations increased from 25 to 30 per one million vehicle miles during the six-year period. Serious citations exhibited only a slight increase when measured against the driver and travel factors.

- Both local police and state police/highway patrols have increased their citation rates per million vehicle miles of travel. Local police citations per one million urban vehicle miles increased from 35 to 40 during the six years; State police citations per million rural vehicle miles increased from 14 in 1969 to 18 in 1974.

- In 1974, 8.7 million of the 17 million traffic accidents compiled by the National Safety Council were investigated by police. The percent investigated during the six years measured, increased from 47 percent to 51 percent. In one-half of these investigations, violations were found and citations resulted.

- Eighty percent of all accident investigations are carried out by local police. This is expected because the majority of accidents occur in urbanized areas.

- The Assessment found that police productivity in traffic enforcement has increased since 1969, but conclusive measurement of productivity gains was difficult for a number of reasons. A 50-hour patrol week was employed in order to measure the frequency of citation issuances and accident investigations. For both local and state police, citations issued per 50-hour patrol week were up from 1969 to 1973, but dropped for local police in 1974. This decrease in the last year was probably due to an increased use of warnings in lieu of actual citations. Simultaneously, state police citations per 50-hour patrol week continued upward in 1974 as more speed detection occurred to support the national 55 mph ceiling.

- The Assessment found that the number of U.S. jurisdictions with police departments able to practice selective enforcement has shown only a slight and gradual increase since 1969. No substantial change occurred in the number of police departments maintaining data to indicate when and where accidents and their causative violations are occurring; the locations and strength of police resources; and the frequency at which the more prevalent accident-causative violations are being detected and cited. Therefore, there has probably been limited improvement in police ability to deploy manpower and equipment resources to locations and at peak times of day and week where accidents and their causative violations most often occur.

- The cost per traffic citation (used as a gross indicator of performance) has declined for both local and state police. Local costs dropped from $80 per citation to $70 in the six years, while state police and highway patrol enforcement costs dropped from $65 to $55 per citation. Local police costs remained higher due to relatively less operational time available for observing traffic violations.

- The conviction rate for all police traffic citations held constant at 77 percent over the entire six years despite a 42 percent growth in traffic citation caseloads. Conviction rates for serious offenses -- one-fifth of all convictions -- remained stable at 66-68 percent.

- Conviction rates for state police and highway patrol citations were significantly higher than conviction rates for local police citations. This difference remained constant over the six-year period: local police conviction rates averaged 73 percent versus 88 percent for state police and highway patrols. The difference for serious violation convictions is even more extreme: a 61

percent conviction rate for local police versus a 92 percent rate for state police.

- Since 1969 the number of licensed drivers convicted for traffic offenses has grown faster than the licensed driver population. This was also true for serious violation convictions until they declined in 1974. This latest year measured experienced more police emphasis on speeding violations resulting from the 55 mph speed limit.

- The Assessment measured the number of days required for judicial disposition of traffic violations, and found that all traffic violations as a group averaged 23 days in the disposition process. The non-serious types of violations required 16 days, and serious violations required 54 days. No significant changes in these disposition times were noted over the six-year period.

- The Assessment estimates that 12 to 14 percent of total traffic convictions were accounted for by repeat violators during the six-year period. This estimate must be viewed as preliminary; the unavailability of hard data in court records required that the repeat violator estimate be constructed using court officials' experience and estimates.

- In 1974 national expenditures at all levels of government for police traffic services amounted to $2.4 billion. Eighty percent of the funds provided police manpower, with the balance for equipment, training, facilities and vehicles.

- The Federal 402 program supplied less than one percent of the police traffic service expenditures over the six-year period. Two-thirds of the 402 dollars went for equipment, vehicles and speed detection devices, particularly for special projects such as Selective Enforcement. The bulk of the remainder went for training, for example to teach police officers how to detect drivers under the influence of alcohol.

drinking-driver countermeasures

The Assessment's objectives in analyzing alcohol programs in the overall highway safety effort were as follows:

- To discern whether countermeasures to combat drinking-driver problems were developed and implemented by U.S. cities and towns from 1969 to 1974, and whether the funding of these countermeasures increased at the State and local levels.
- To examine whether arrest and conviction rates have increased for persons apprehended by police for driving under the influence of alcohol.
- To see whether courts have received information to assist them in determining before sentencing, whether defendents are problem drinker-drivers, or are heavy or moderate social drinkers.
- To ascertain whether the traditional sentencing courts impose on drinking drivers is giving way to different types of judicial disposition -- that is, whether alcohol rehabilitation is available and used by judges rather than their resorting exclusively to fines, license suspension and revocation, and jail sentences.
- To determine the number of convicted persons entering alcohol rehabilitation, and whether shifts in the use of various treatment modes have occurred during the past six years.

Generally, the Assessment finds that important shifts in alcohol programs and the number of drivers that come in contact with these programs have occurred since 1969, and in many instances when these shifts are examined against factors such as the number of licensed drivers, vehicle miles of travel, overall police enforcement and population growth, there has been a significant change.

In order to examine these trends, the alcohol program analysis is divided into the following sections:

- Alcohol Program Funding
- Growth of Drinker-Driver Countermeasures

- Alcohol Traffic Enforcement
- Judicial Disposition
- Background Investigation
- Rehabilitation Referral

The section on funding examines the levels of expenditure by State, localities and the Federal 402 Program. Next, there is an examination of number of jurisdictions in the U.S. using special alcohol enforcement patrols and other countermeasures, and how this has increased since 1969. The analysis of enforcement is concerned with the levels of arrests of drinking drivers, and evidentiary testing of violators for the presence of alcohol in their blood.

After arrest, defendants then proceed through a judicial phase which may or may not include a background investigation. Ideally, courts should have knowledge of the prior arrest record of the defendant, as well as any psychological, medical or other findings which indicate a tendency to problem drinking. Ultimately a judicial decision is rendered, and the analysis will look at the types of sentencing courts are using in alcohol traffic cases. In many towns and cities, this disposition will also include rehabilitation using various treatment forms. The Assessment has developed various statistics showing the degree to which courts and other agencies refer persons convicted of alcohol offenses to different treatment programs.

ALCOHOL PROGRAM FUNDING

Funding for alcohol countermeasures to combat the drinker-driver problem occurs in two Section 402 areas: the alcohol standard and the police traffic services standard. The Assessment has developed the State, local and Federal 402 program funding under the alcohol standard, and this is shown in Table 1 which follows. Although the various government levels of funding for the overall police traffic services standard area are known, States and localities are generally unable to pinpoint the amount of that standard's funding which is directly attributable to alcohol traffic enforcement. This funding would cover items such as police salaries, their training, automobiles, breath testing devices and instruction on how to use them. This would no doubt amount to a sizeable portion of this standard's funds. Therefore, in the analysis of the alcohol expenditures under only the alcohol standard, it is recognized that the expenditures shown are significantly less than if they included alcohol enforcement supported under the police traffic services standard.

Relative to U.S. highway safety expenditures, funding for alcohol programs remained at a small level from 1969 to 1974 -- staying below two percent at its high point in 1974. Nevertheless, Table 1 shows that overall funding rose from $10 million in 1969 to $48 million by 1974. The Alcohol Safety Action Projects (ASAP) under Federal Section 403 provided most of these funds. However, State and Local funding did increase by 50 percent.

TABLE 1

Sources of Alcohol Funding
(millions of 1974 dollars)

	1969	1970	1971	1972	1973	1974
State and local	6.2	8.4	8.4	7.9	7.7	9.9
Federal Section 402	3.8	2.6	4.6	7.1	8.3	7.1
Federal Section 403	-	4.8	22.0	37.3	41.3	31.4
Total	10.0	15.8	35.0	52.3	57.3	48.4

Within the Federal 402 program itself, greater emphasis has shifted toward the alcohol standard area. Obligations under the alcohol standard grew from 4.8 percent of total 402 obligations in 1969 to almost 12 percent in 1974. This represents an 87 percent real growth in terms of 1974 dollars. Therefore, it appears from the analysis that both State/local emphasis and Federal 402 program emphasis are increasingly on alcohol countermeasure programs.

GROWTH OF DRINKING-DRIVER COUNTERMEASURES

The analysis of the trend in development and implementation of countermeasures covers the 6435 U.S. jurisdictions which according to the 1970 Census have 2500 or more residents. Figure 1 which follows, presents seven countermeasures and the number of jurisdictions that employed each in 1969 versus each of the past three years. The number of jurisdictions covered by special alcohol enforcement patrols have remained relatively small over the six-year time period, although statistics presented in the next section on Alcohol Traffic Enforcement indicate that the arrests of persons suspected of driving under the influence of alcohol have doubled during the six years, and have become a significantly greater portion of total police traffic citation efforts. By comparison, the number of jurisdictions covered by

background investigations have remained significantly large, about two-thirds of U.S. jurisdictions over the time period. This is somewhat misleading due to the fact that background investigations in most localities consist only of two elements: obtaining blood alcohol evidentiary information, and a brief check of the defendant's prior arrest record. The growth of other types of investigations, such as medical diagnosis and employment checks, has increased but does not begin to cover more than a small fraction of defendants.

FIGURE 1

GROWTH OF DRINKING-DRIVER COUNTERMEASURES

Alcohol Programs in the 6435 U. S. Jurisdictions With 2500 or More Residents

	Number of Jurisdictions			
Countermeasures:	1969	1972	1973	1974
Alcohol Enforcement Patrols	240	370	510	590
Background Investigations Performed	4060	4580	4720	4960
Court Referrals to Rehabilitation	1550	2690	3500	4060
Post-Rehabilitation Follow-up	170	580	1130	1520
Public Information & Education	1260	1910	2080	2340
Alcohol Program Staffs	630	1270	1720	2070
Alcohol Program Coordinators	490	1360	1730	2090

Figure 1 indicates that use by courts and other agencies of referral to various types of alcohol rehabilitation has grown by almost a factor of three in terms of the number of jurisdictions where this is occurring.

Statistics in the later section on Judicial Disposition will show that in the disposition process there has been a considerable increase in the number of courts willing to apply rehabilitation in conjunction with the traditional dispositions of fines, jail sentences and driver license actions. In 1974, follow-up or post-rehabilitation evaluation of the improvement in the defendant's driving and drinking activities occurred in 22 percent of U.S. jurisdictions, and this activity is confined generally to the larger cities and towns. Concurrently, with the development of these countermeasures has gone the development of alcohol program coordinators and staffs. The period 1972 through 1974 shows a significant increase over the base year

1969. These staffs usually generate additional alcohol program activities, which accelerates the number of jurisdictions covered in the other countermeasure areas.

Figure 2 translates the number of jurisdictions shown in Figure 1 into the percent of U.S. population covered by various countermeasures. In this manner, the relatively large or small number of jurisdictions applying a particular countermeasure will not be misleading in terms of the actual population served.

FIGURE 2

GROWTH OF DRINKING-DRIVER COUNTERMEASURES

Coverage of U. S. Population by Alcohol Programs

	Percent of Population Covered					
Countermeasures:	**1969**	**1970**	**1971**	**1972**	**1973**	**1974**
Alcohol Enforcement Patrols	2	2	2	15	18	20
Background Investigations Performed	52	52	52	55	58	61
Court Referrals to Rehabilitation	18	17	20	37	49	57
Post-Rehabilitation Follow-up	5	5	7	11	18	30
Public Information & Education	15	19	20	23	34	37
Alcohol Program Staffs	12	12	20	31	43	45
Alcohol Program Coordinators	10	10	19	32	43	45

The population in jurisdictions covered by alcohol enforcement patrols in 1974, for example, was 20 percent. However, this does not reflect regular enforcement which also arrests many persons for driving under the influence. This Assessment's data base does not offer the ability to discern the number arrested by special patrols versus those arrested by regular patrols. However, it has been determined from the data that police departments as a whole, in jurisdictions with or without special alcohol patrols, are producing a greater number of alcohol-related traffic arrests each year.

ALCOHOL TRAFFIC ENFORCEMENT

Figure 3 presents the estimated number of drinking drivers arrested each year since 1969. The level of arrests has grown from 561 thousand in

that year, until it reached 1.1 million in 1974. This was accomplished by both regular police traffic enforcement and special alcohol patrols discussed earlier.

FIGURE 3

DRINKING-DRIVER ARRESTS

Growth Among Licensed Drivers and Overall Police Traffic Enforcement

	1969	1970	1971	1972	1973	1974
DWI Arrests (Thousands)	561	603	708	882	1041	1130
DWI Arrests Per 1000 Licensed Drivers	5.2	5.4	6.2	7.5	8.6	9.1
DWI Arrests: Percent of All Traffic Citations	2.1	2.1	2.3	2.6	2.9	3.0
DWI Arrests: Percent of Serious Traffic Citations	8.7	8.6	9.3	11.1	12.0	13.2

NOTE: "Serious Citations" include alcohol-related traffic violations, driving without license, felony with auto, hit and run, accident citations, and reckless driving.

Figure 3 indicates that despite a continuous, steady growth in U.S. licensed drivers, the number arrested for driving under the influence is increasing at a faster rate. By 1974, nine out of each 1000 licensed drivers were being arrested for this offense. Viewed a different way -- as a portion of both total police citations and the more serious types of citations (defined on Figure 3) -- alcohol arrests went up substantially from 1969 to 1974. The four sets of statistics on Figure 3 consistently show that police enforcement against persons driving under the influence of alcohol has made substantial gains over the past six years. Figure 4 depicts this growth in arrests versus a slower growth in alcohol consumption.

FIGURE 4

TRENDS IN DWI ARRESTS AND DRINKING

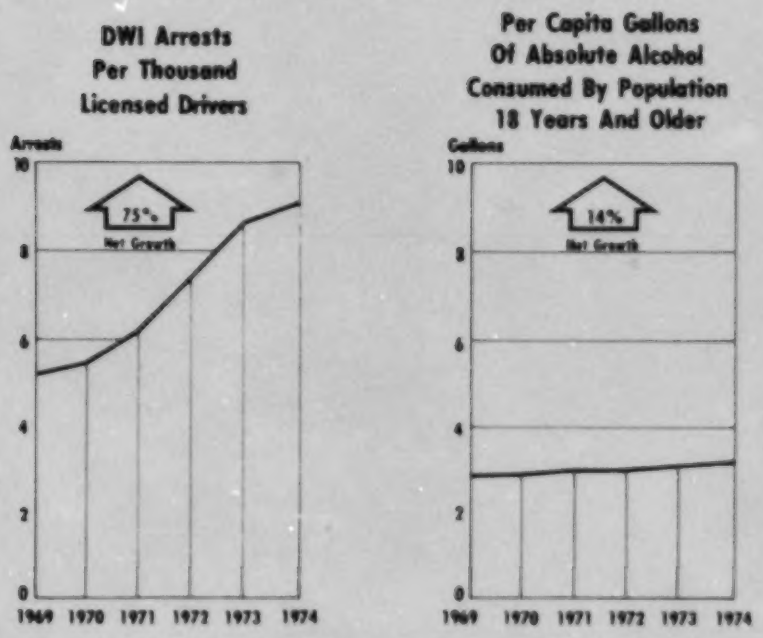
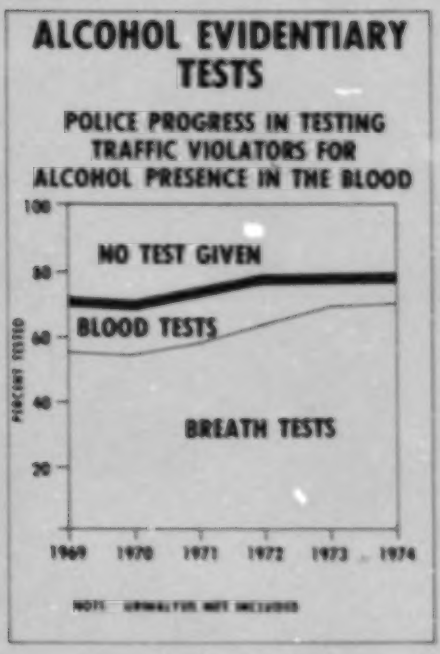


Figure 5 gives a simplified picture of the progress police are making in testing suspected drinking-driver offenders for the presence of alcohol in their blood (Blood Alcohol Concentration). In an early section of the alcohol analysis it was noted that the high degree of background investigations can be explained in part because courts are availing themselves of BAC evidentiary information before final sentencing of defendants. Figure 5 provides data on the beginning of this process -- police testing of potential DWI offenders for illegal levels of alcohol in their blood. Overall, the number of arrested drivers tested increased from 392 thousand in 1969 to 872 thousand in 1974.

FIGURE 5



By 1974, almost eight out of every 10 drivers arrested for suspected drinking driving received a BAC test -- whether a breath test or a blood test. For the Assessment analysis, only breath and blood tests for alcohol presence were measured for growth. A check on the number of urine and saliva tests suggests that breath and blood tests constitute better than 90 to 95 percent of the tests performed in the U.S.

As the number of evidentiary tests have increased sharply since 1969, breath tests accounted for a greater and greater portion of total tests given in each succeeding year. A 1973 study of the use of Federal 402 funds under Alcohol Program Standard 308 found that 45 percent of the Federal Grant was used to purchase breath test equipment and train operators to make the tests. The fact that 78 percent of suspected alcohol offenders were tested for alcohol in 1974 indicates the level of use of this equipment and similar test devices bought with State matching funds and local resources. Emphasis by police is increasingly on obtaining and using BAC evidentiary results to support the prosecution of alcohol traffic offenders.

JUDICIAL DISPOSITION IN ALCOHOL TRAFFIC CASES

The Assessment sampled court records for 1969-1974 in 105 cities and towns in the U.S. to develop an estimated national profile of actions courts

normally take against defendants charged with driving under the influence. One major finding is that the conviction rates have not dropped despite a doubling in alcohol arrests and therefore greater caseloads.

FIGURE 6

JUDICIAL DISPOSITION OF ALCOHOL OFFENDERS

	1969	1972	1974
Drivers Arrested	**561,000**	**882,000**	**1,130,000**
Percent of Drivers Receiving:			
Fine & License Suspension/Revocation	39	43	34
Jail, Fine & License Action	29	25	26
Rehabilitation & Fine, License Action, Etc	5	7	15
Other Conviction Dispositions	2	2	2
Reduced Charges	13	12	12
Not Guilty, Not Processed, Etc.	12	11	11
Convicted of Original Alcohol Offense	**75%**	**77%**	**77%**

Figure 6 shows that despite a two-to-one increase in the number of persons arrested for drinking driving, the rates at which they are convicted of the original alcohol offense has stayed at a constant 75-77 percent since 1969. The proportion of defendants convicted on some lesser traffic offense (after plea bargaining or other action to reduce the alcohol charge to another violation), found not guilty or not prosecuted has also remained static. What has shifted during the six-year period is the disposition imposed by courts when defendants are found guilty. Emphasis on traditional penalties has declined while at the same time courts have instituted more referral to alcohol rehabilitation. This is shown in greater detail in Figure 7 which takes the 75-77 percent convicted on the original charge and divides this into the various disposition categories.

FIGURE 7

DRINKING-DRIVING CONVICTIONS

	1969	1972	1974
Drivers Convicted	416,000	674,000	861,000
Percent of Drivers Receiving:			
• Fines	28	28	20
• Jail	0.1	0.2	0.4
• License Suspension/Revocation	0.1	0.2	0.3
• Fine & License Action	25	29	25
• Fine, License Action & Jail	37	33	34
• Rehabilitation & Fine	0.2	1.5	2.6
• Rehabilitation, Fine & License Action	5	7	16
• Other Dispositions	5	2	2

On the one hand, there has been some decrease in the percentage of drivers who receive various combinations of fines, jail sentences and license actions. Concurrently, the number of people who are referred to rehabilitation in conjunction with a traditional disposition has increased significantly. Although the Assessment survey does not have information to relate the availability of more background investigation material for court use (which is analyzed in the next section) to their greater tendency to use rehabilitation, one can infer that courts are beginning to look at a larger range of dispositions in dealing with defendants. This in turn suggests that courts are more sensitive to the fact that they are dealing with different types of drinkers, including those with serious drinking problems.

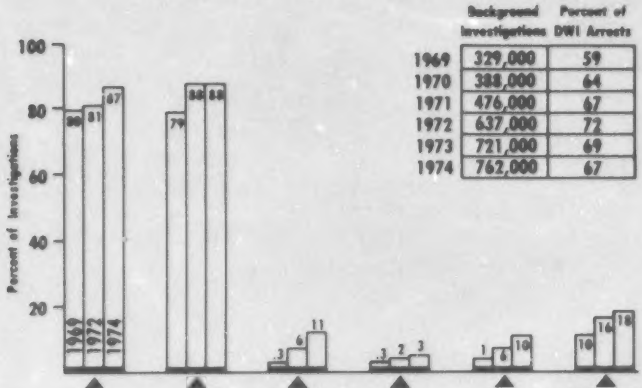
Figure 7 indicates that while the number of drivers convicted of alcohol offenses increased from 416 thousand to 861 thousand during the six years, the percent of defendants who received referral to alcohol rehabilitation as a part of their total disposition jumped from five to nineteen percent. Translated into numbers of people, the data indicate that approximately 20,000 persons who were convicted of driving under the influence in 1969 received referral to rehabilitation as a portion of their dispositon. By 1974 this same statistic had increased to almost 160 thousand people of the 861 thousand who were convicted.

BACKGROUND INVESTIGATIONS FOR DWI DEFENDENTS

Figure 8 displays major data developed during the examination of background investigation employed by courts in alcohol traffic cases. Currently, and back to 1969, blood alcohol concentration results from police tests and prior arrest information are gathered for use in almost 80-90 percent of background investigations before final court sentencing. Currently these types of investigations are going on in almost 5,000 of the 6,435 urban jurisdictions in the United States.

FIGURE 8

DEPTH OF BACKGROUND INVESTIGATION IN ALCOHOL TRAFFIC CASES



	Background Investigations	Percent of DWI Arrests
1969	329,000	59
1970	388,000	64
1971	476,000	67
1972	637,000	72
1973	721,000	69
1974	762,000	67

	BAC Results	Prior Arrests	Problem Drinker Diagnosis	Medical Findings	Employment Check	Interviews: Defendant & Family
1969	263	261	1	1	4	32
1972	517	563	35	13	40	101
1974	660	670	81	26	77	136

BACKGROUND INVESTIGATIONS (THOUSANDS)

A major finding of the Assessment is that although the number of background investigations have more than doubled since 1969, investigations as a percent of alcohol traffic arrests have increased by only 15 percent. As indicated earlier, this investigation usually consists of a check on the BAC level at arrest, and a prior arrest review. The more sophisticated types of investigations, such as diagnosis of problem-drinker drivers and medical examinations, have increased but are done in only 10 to 18 percent of the investigations. For example, of the better than 1.1 million drivers arrested for an alcohol-related traffic offense in 1974, only 81 thousand received some type of problem-drinker diagnosis. Only 26 thousand violators received a medical examination. These new techniques are receiving a great deal of added emphasis as is indicated on Figure 8, but the other

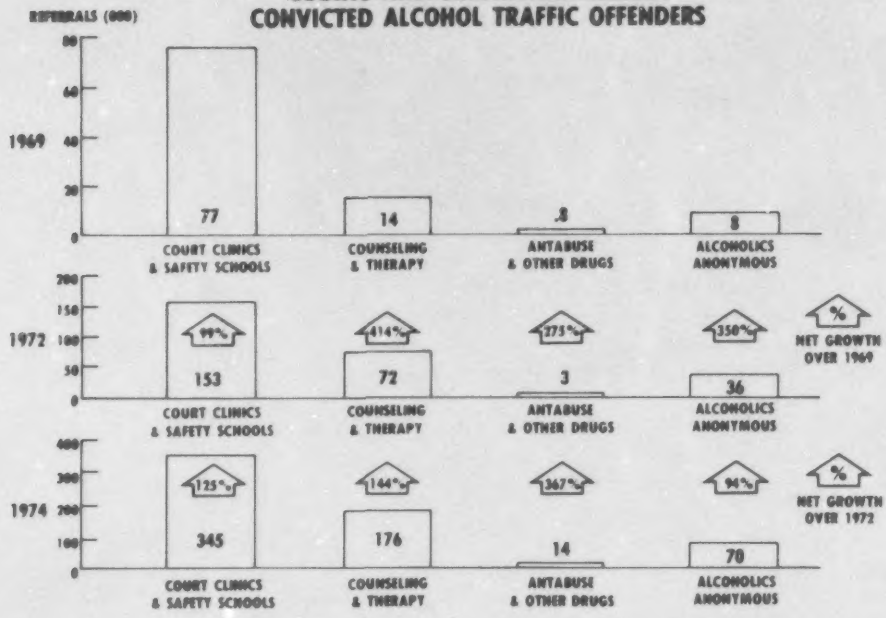
types of investigations, consisting of the BAC level at arrest and prior arrest review, remain predominant in most jurisdictions.

REFERRAL TO ALCOHOL REHABILITATION

The judicial profiles presented earlier in Figures 6 and 7 show that courts and municipal agencies are increasing rehabilitation referrals as a form of judicial disposition in alcohol traffic cases. Figure 9 gives a breakdown of the types of referrals being used in 1969, 1972 and 1974. Most persons convicted of an alcohol traffic offense were referred to court clinics and safety schools. In fact, the number of people referred to this particular mode increased substantially in 1972 and 1974. This growth rate is shown in the arrows on Figure 9.

FIGURE 9

SHIFTS IN TREATMENT MODES USED BY COURTS AND OTHER AGENCIES FOR CONVICTED ALCOHOL TRAFFIC OFFENDERS



Although counseling, therapy and programs employing Antabuse and other drugs are being used more often, in absolute terms of numbers of people referred, the level of use remains very small compared to the number being sent to clinics and schools. Although the number of jurisdictions using

some form of court referral to rehabilitation has increased by almost a factor of three to the point where 4,060 jurisdictions were involved in 1974 (versus 6435 urban jurisdictions in the United States), very few are using the newer rehabilitation approaches.

One final statistic is indicative of the advances made in the use of referral to alcohol rehabilitation. In 1969 approximately two out of eight drivers convicted of an alcohol-related offense were referred to alcohol rehabilitation of some form. By 1974, better than five of eight were being referred.

SUMMARY OF KEY ALCOHOL FINDINGS

The major findings developed by the Assessment over the six-year period 1969 through 1974 are as follows:

- Relative to U.S. highway safety expenditures, funding of alcohol programs remains at under two percent of the total. Combined Federal, State and local expenditures had grown from $10 million in 1969 to $48 million by 1974.

- A greater portion of 402 grants is going into the alcohol program standard. This portion of the total 402 program increased from 4.8 percent in 1969 to 12 percent in 1974.

- The number of jurisdictions using alcohol enforcement patrols remains relatively low at 590 out of 6435 jurisdictions. However, the number of alcohol-related traffic arrests almost doubled during the six-year period -- from almost 600,000 in 1969 to better than 1.1 million in 1974. These arrests as a percent of licensed drivers, total traffic citations, and the more serious citations issued by police, also doubled from 1969 to 1974.

- Alcohol evidentiary tests as a percent of DWI arrests have continued to increase since 1969. The vast majority of these tests continue to be breath tests and the breath tests became a greater percent of the total tests administered in each succeeding year.

- Although the number of drivers arrested for DWI has more than doubled and thereby increased court caseloads, the percent of offenders convicted of the original alcohol offense has remained steady at 75 to 77 percent.

- Courts' use of rehabilitation as a part of the final disposition in alcohol traffic cases has increased by a factor of three during the six-year period. Concurrently, reliance on the traditional sentences imposing fine, jail and license action has declined.

- The use of background investigations has grown as a percent of DWI arrests-- from 59 percent in 1969 to 67 percent in 1974. Investigations limited to BAC results and prior arrests are eight times more frequent than investigations involving problem-drinker diagnosis, medical examinations, employment check and interviews with the defendant and the family.

- Referrals of defendants by the courts to alcohol rehabilitation has increased significantly: from two in eight defendants in 1969, to five in eight in 1974. Referral is most often to court clinics and safety schools. However, referrals to individual and group counseling have increased from 14,000 referrals in 1969 to 176,000 in 1974.

emergency medical services

Victims of traffic accidents may die needlessly or be injured further without proper emergency care. For this reason, NHTSA established an Emergency Medical Services program. Its goals are to encourage development of EMS organizations to respond to crashes, administer emergency treatment, and transport victims to medical facilities quickly and competently.

The purpose of this chapter is to assess overall emergency medical service activities, particularly efforts associated with traffic accident victims from 1969 through 1974. The ultimate measure of effectiveness is the number of victims saved by immediate response, proper care and rapid transport. As a preliminary step, this chapter discusses EMS growth using intermediate measures including funding, resources such as equipment and personnel, the capacity for services to meet demand, and finally, a primary performance indicator, traffic-related responses.

EMS PROGRAM FUNDING

The Assessment's analysis of EMS funding produced two major findings:

- Federal 402 Grants have stimulated significant State and local expenditures for EMS systems since 1969.
- Despite these increased expenditures, EMS in 1974 comprised 1.4 percent of overall highway safety program funding.

One major analytic criterion in the Assessment was to discover whether 402 grants produced catalytic effects in State and local programs. Apparently no better example exists of this effect than the Emergency Medical Services area. Simultaneously with the growth in Federal 402 grants from $9.1 million in 1969 to $12.8 million in 1973, came a growth in the State/local share from $15.9 million to $32.2 million.

Over the entire six-year period, States and localities provided an average 71 percent of total governmental funds for EMS. On a year-by-year basis, the State/local share increased from 64 percent in 1969 to 77 percent in 1974.

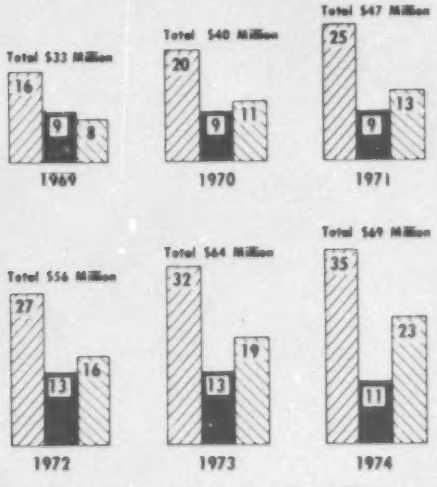
States used 402 grants for purchasing ambulances and medical equipment, paying salaries of Emergency Medical Technicians, providing their training in the DOT 81-hour emergency care course, installing communications capability and funding EMS comprehensive plans and surveys. This Federal assistance in turn stimulated States and localities to provide their own resources for these same activities, to a substantially larger degree. Because EMS as a concept is fairly new, the Federal 402 program has taken a strong lead in this area through establishing program goals, policies and standards.

Although EMS has begun to consume a greater proportion of Federal 402 funds (rising from 11.5 percent in 1969 to 17.7 percent in 1974), and the State/local share has increased each year, EMS as a whole continues to account for a small fraction of U.S. highway safety funding. States and localities in 1969 spent slightly less than one percent of their safety funds for EMS. By 1974, this share had grown to 1.4 percent. However, what is not considered in this percentage is the value of private contributions and volunteer services to the overall EMS program objective.

Through cost sampling of volunteer rescue squads and commercial ambulance services throughout the United States, conservative estimates were developed of the value of private contributions and volunteer services. These are presented along with State, local and Federal expenditures on Figure 1. When the three funding sources are combined, EMS support rose from $33 million in 1969 to $69 million in 1974 -- better than 100 percent growth.

FIGURE 1

SOURCES OF EMERGENCY MEDICAL SERVICE FUNDING



Measuring "program funding" for EMS therefore offers some unique situations which normally do not apply in other safety areas where funding is chiefly governmental. Federal grants and State/local government funds can purchase ambulances, train people, buy communications and prepare an EMS plan. But often a community will establish a volunteer service housed in a building provided by the town government and staffed on a volunteer basis by the citizens of the town. The locality may receive Federal 402 and State funds for purchasing an ambulance and stocking it with medical equipment. Often local fund raising and private contributions will provide the town's matching share toward the purchase price. In many instances, the total EMS effort is carried out soley with local funds.

Although not measured in the Assessment, at least four other sources of funding have been available to EMS services: grants from the Department of Health, Education and Welfare under a 1973 Act; funds from private foundations; low interest loans from the Department of Agriculture; and a total of $5 million in Federal funding provided under Section 403 of the Highway Safety Act from 1969 to 1971.1/ Thus, support for EMS, unlike other highway safety areas, can come from at least seven sources. In each of the three sources actually measured, significant growth occurred from 1969 to 1974.

EMS RESOURCES AND CAPABILITY

The 1969-1974 trend in resources was one of growth except for a decline in the number of services making emergency responses. Overall, there was an increase in the number of ambulances, emergency medical technicians, EMS staff trained in the 81-hour Department of Transportation Basic Care Course, ambulances equipped with communications capability, and citizens covered by a standard emergency response telephone number.

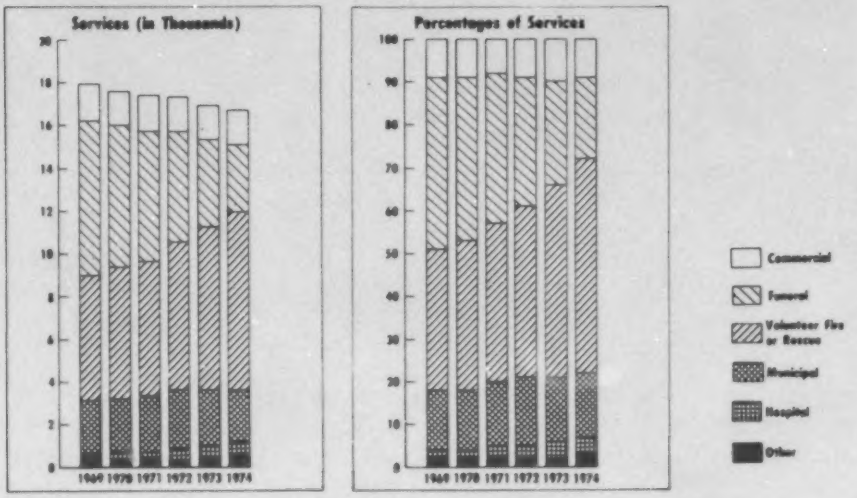
Emergency Service Organizations

Total emergency medical services declined six percent from 1969 through 1974, from 18 thousand to 17 thousand as depicted in Figure 2.

1/ Section 403 funds guided implementation of model EMS projects that ranged from improved EMT training to use of helicopters for emergency responses.

FIGURE 2

TYPES OF AMBULANCE SERVICES



The reduction in services was caused predominately by the decline in the number of funeral homes making emergency responses. This decrease from 7.3 thousand to 3.2 thousand services during the six-year period was partly compensated for by the rise in volunteer fire and rescue organizations from 5.9 thousand to 8.4 thousand. One reason for the decrease in funeral homes providing emergency transport was local government preference for other groups providing emergency medical assistance with more advanced equipment, better trained personnel, and round-the-clock operations. This emphasis is clearly behind the increase in volunteer services making emergency responses.

The overall drop in services shown in Figure 2 was paralleled by a decline in services for every one million people and for every one hundred U.S. jurisdictions, as displayed in Figure 3.

FIGURE 3

NUMBER OF AMBULANCE SERVICES AS RELATED TO POPULATION AND JURISDICTIONS

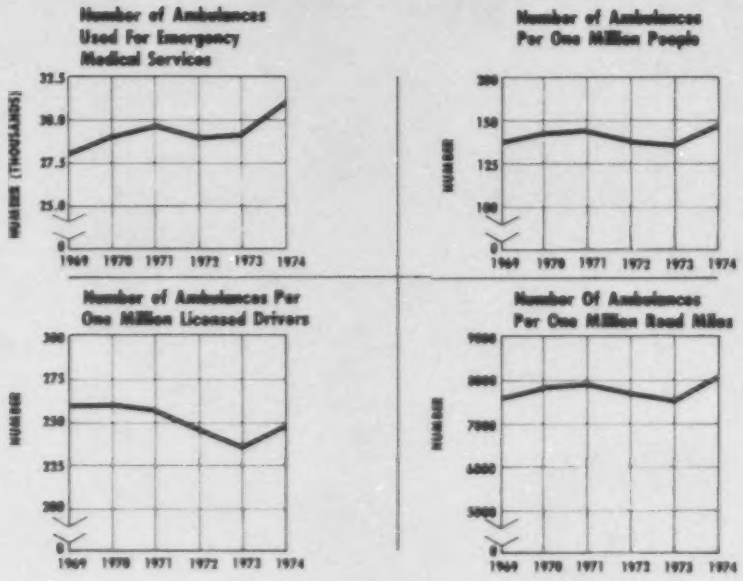
	1969	1970	1971	1972	1973	1974
Per One Million Population	89	87	85	84	81	80
Per One Hundred Urban and Rural Jurisdictions[1]	87	85	84	84	82	81

[1] These numbers are based on the 20,768 rural and urban jurisdictions of all sizes recorded in the 1970 Census.

Ambulances

The decline in funeral homes making emergency responses did not diminish the number of EMS ambulances. As Figure 4 depicts, ambulances rose from 28 thousand to 31 thousand over the six-year period. This growth kept pace with increasing U.S. population and road miles, but fell behind the increase in licensed drivers.

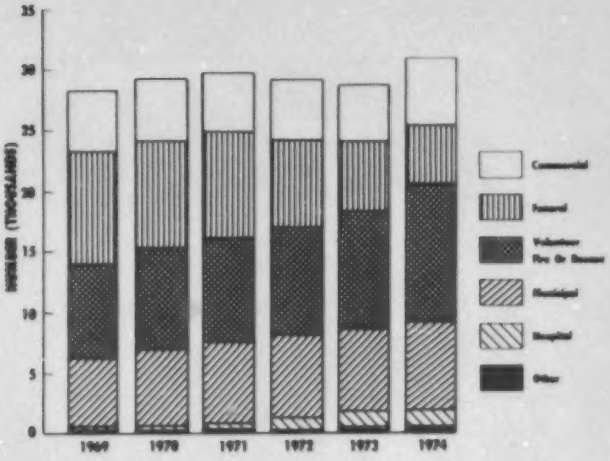
FIGURE 4



There were also shifts in the number of ambulances owned by each type of EMS service. The most marked increase was in volunteer services ambulances. (See Figure 5.) This development paralleled the higher number of volunteer organizations.

FIGURE 5

NUMBER OF AMBULANCES MAKING EMERGENCY RESPONSES BY TYPE OF SERVICE

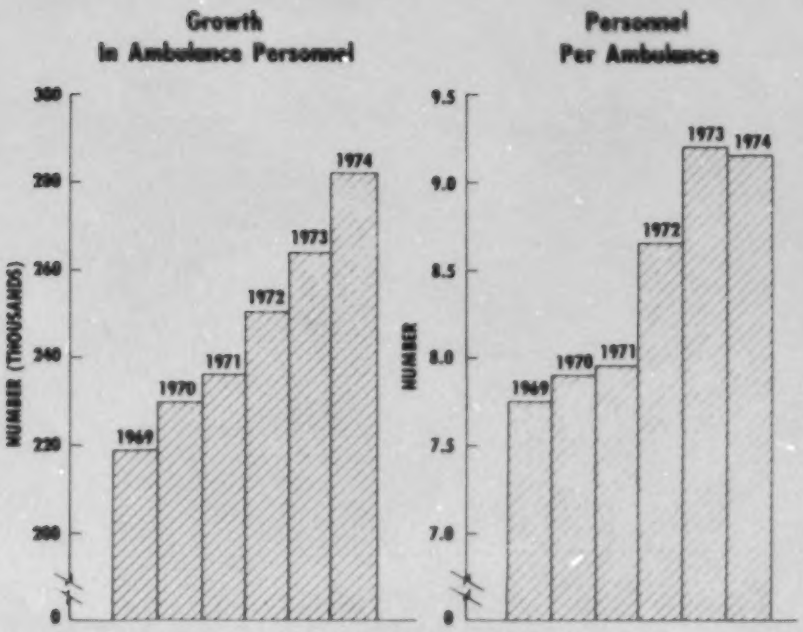


Personnel

The level of ambulance personnel surged from 219 thousand to 282 thousand for a six-year growth rate of 29 percent, as noted in Figure 6 The result of the rise was an increase in the average number of staff for each ambulance -- from 7.8 to 9.0 per ambulance. The trend points up a greater capacity for 24-hour service as more persons are available to staff the ambulance. This overall improvement in potential is substantiated by the greater average number of yearly traffic responses per vehicle, which is discussed later in the EMS analysis.

The EMS standard requirements have played an important role by requiring that services using Section 402 funds provide 24-hour service and staff each ambulance with two EMTs with 81-hour basic care training.

FIGURE 6

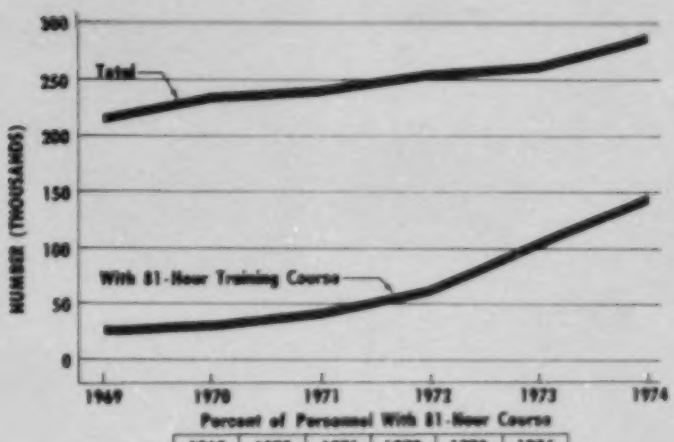


Training

As the number of ambulance personnel grew, a greater percent were trained in the DOT 81-hour Basic Training Course for Emergency Medical Technicians, or an equivalent course. Attendants trained showed a four-fold increase -- from 28 thousand to 142 thousand over the six years measured. As depicted in Figure 7, by 1974 50 percent had received the training.

FIGURE 7

AMBULANCE PERSONNEL



Percent of Personnel With 81-Hour Course

1969	1970	1971	1972	1973	1974
13	13	16	24	38	50

The trend regarding 81-hour or equivalent training mirrors Federal, State and local concern for upgrading the emergency care EMTs render to accident victims. Fifty States and the District of Columbia have adopted the 81-hour or equivalent course as standard for all ambulance attendants making emergency responses.

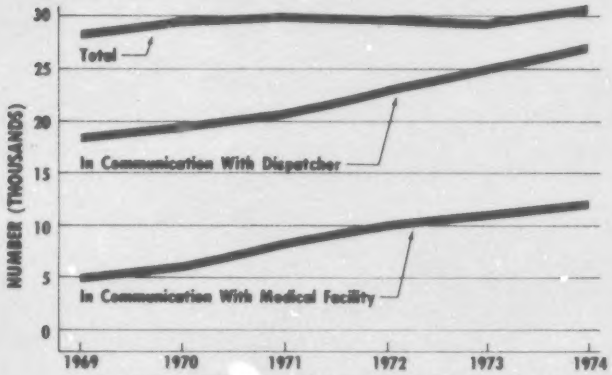
Communications

Over the six-year period, improvements in communications technology, standardization of equipment, and radio frequency band assigments had a positive impact on emergency medical service systems. These improvements have resulted in the potential for ambulance personnel to communicate with a central dispatcher relaying calls for emergency assistance. They have also resulted in the potential for ambulances to communicate directly with hospitals. This permits these facilities to prepare for injured persons and to provide EMTs with medical advice enroute to the hospital. The ambulance attendants can also be instructed to take the victim to another medical facility if the first hospital cannot provide the necessary treatment.

As depicted in Figure 8, since 1969 EMS services have increasingly utilized these technological improvements. Ambulances in communication with a dispatcher have risen from 18 thousand to 27 thousand, or from 64 percent to 87 percent of the total. Ambulances in contact with a medical facility have multiplied from 5 thousand to 12 thousand -- an increase from 19 to 39 percent of total vehicles.

FIGURE 8

NUMBER OF AMBULANCES



Percent Of Ambulances In Communication With

	1969	1970	1971	1972	1973	1974
Dispatcher	64	67	71	78	88	87
Medical Facility	19	22	28	33	38	39

Emergency Response Telephone Numbers

The final EMS resource measured by the Assessment is the extent of population covered by a single telephone number tied directly to central emergency dispatch for police, fire and EMS personnel. This coverage trend since 1969 is presented in Figure 9.

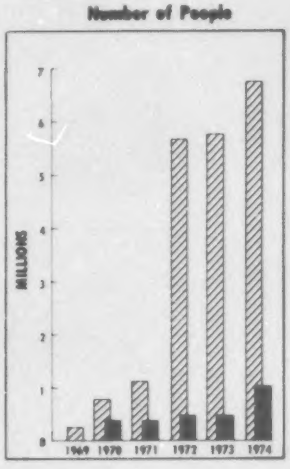
FIGURE 9

POPULATION USING 911 OR OTHER SINGLE TELEPHONE NUMBER FOR CENTRAL DISPATCH OF ALL EMERGENCY SERVICES

Percent of Population Covered

	1969	1970	1971	1972	1973	1974
911 Phone No.	.1	.4	.6	2.7	2.8	3.2
Single Non-911 Phone No.	0	.2	.2	.3	.3	.5

Number of People



During the six years, the number of persons with access to telephone number 911 for central emergency dispatch increased from 265 thousand to 6.8 million. Expressed another way, cities and counties with this service grew from 16 to 125. Persons covered by a single emergency telephone number other than 911 increased from zero in 1969, to more than 1 million in 1974. This represents an additional 55 cities and counties. Overall, the percent of U.S. population under this emergency "umbrella service" concept increased from well under one percent in 1969 to almost four percent in 1974.

EMS Response Capability

One measure of the effective use of the resources just discussed is the amount of time required to respond to a traffic accident. The Assessment investigated the percent of urban population and geographic area which could be reached within seven minutes. In addition, it examined response capability within a 30-minute standard, for certain sample rural communities. Based on the 1969-1974 data reported for the ten sample States, urban communities have a high capability of reaching their population within seven minutes. As Table 1 shows, EMS organizations in the sample communities were able to reach over 90 percent of their population and area within seven minutes in 1969, and this capability continued through 1974.

TABLE 1
EMS Capability In Urban Areas
° Response in 7 minutes or less

		Community Population			
		2,500-10,000	10,000-25,000	25,000-100,000	100,000-Plus
Percent of Population Reached	1969	100	92	99	98
	1974	100	94	99	99
Percent of Geographic Area Covered	1969	100	90	98	96
	1974	100	93	99	99

Arriving at a similar type of national finding for response capability in rural areas is problematic for a number of reasons. First, the notion of what constitutes a "rural" community or area is difficult to define.

Determining where urbanized (as opposed to "urban") areas end and rural areas begin is a problem experienced even in taking the Census.

Rural areas can take a variety of physical forms. They may fan out from a small city or town, be located near a large urban area, or may be spread out in deserts and mountain regions. Physical expanses may be so extreme as to require EMS groups to respond with helicopters and fixed-wing aircraft as well as with regular ambulance. Given these wide variations in rural settings, the analysis is confined to presenting observations at certain sites within the ten sample States.

As expected, EMS organizations responding in rural areas show a wide divergence in their ability to reach victims within 30 minutes. Service coverage in communities with fewer than 2500 persons ranged in both 1969 and 1974 from 50 percent to 100 percent of population and from eight percent to 100 percent of geographic area. Services operating in unincorporated areas of all sizes, exhibited similar differences, varying from 25 percent to 100 percent population coverage in both 1969 and 1974, and from 50 percent to 100 percent geographic coverage.

These overall urban and rural figures do not indicate a marked growth during this period. However, in no instance did a sample site's EMS coverage decline despite growth in population.

EMS RESPONSES

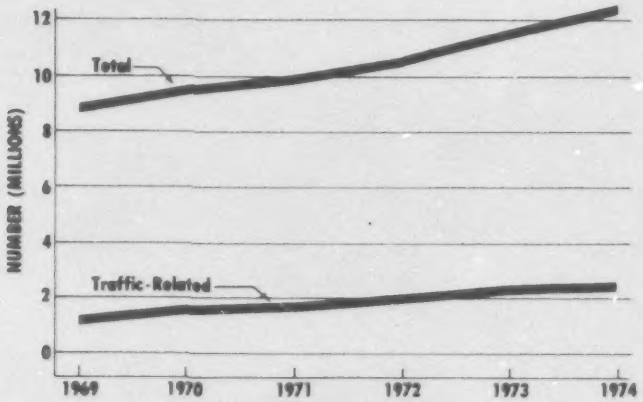
It should be recognized that the program funds and resources discussed earlier support a wide range of EMS operational activities. These include emergency care and transport for victims of all illnesses and accidents requiring emergency hospital treatment, rescues and patient transfers. For the Assessment's purposes however, the analysis particularly concerned that portion of EMS work associated with traffic accident injuries. Therefore, the principal indicator of program output examined in this section is the trend in EMS responses to traffic accidents.

Traffic Accident Responses

The number of traffic-related emergency responses increased from 1.3 million in 1969 to 2.3 million in 1974 -- a growth of almost 80 percent (Figure 10). Total responses for other types of accidents and illnesses also rose, but the traffic accident portion increased even faster. The proportion of total responses attributable to traffic calls increased from 15 percent in 1969 and to 19 percent in 1974.

FIGURE 10

EMERGENCY MEDICAL SERVICE RESPONSES



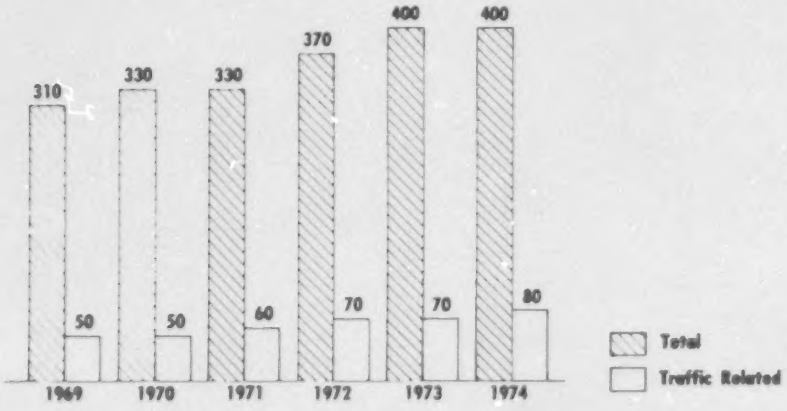
Percent Of Traffic-Related Responses

1969	1970	1971	1972	1973	1974
15	17	17	18	18	19

EMS systems became more productive during the six-year period. Although EMS resources such as ambulances and personnel showed a marked growth from 1969 to 1974, total emergency responses grew at a faster rate. For example, Figure 11 shows the average number of traffic accident responses for each ambulance climbed from 50 responses in 1969 to 80 responses in 1974. The benefits of this increased productivity were diminished somewhat by the mounting cost of each response which rose from 25 to 30 dollars in the six-year period. This increase in cost per response is basically attributable to more expensive equipment and training.

FIGURE 11

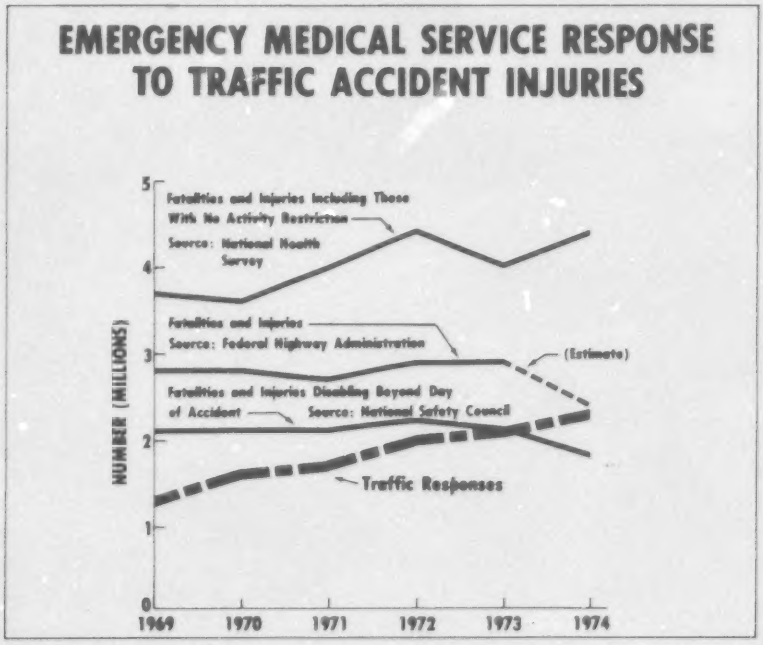
AVERAGE NUMBER OF RESPONSES PER AMBULANCE



Traffic Accident Coverage

Although the growth in traffic responses is revealing, even more directly related to performance is whether responses kept pace with the number of traffic fatalities and injuries. Figure 12 compares the growth in traffic responses with various estimates of fatalities and injuries published by the National Safety Council, the U.S. Public Health Service, and the Federal Highway Administration. These published figures differ due to different definitions of "injured persons" and "injury severity", and varying data reporting procedures.

FIGURE 12



The overall finding to be drawn from Figure 12 is that in each succeeding year since 1969, a greater portion of traffic accident victims were reached by an EMS ambulance crew. In interpreting these trend lines, two facts should be considered. During the survey of EMS organizations in the 105 local sites of the sample, it became apparent that many traffic victims are also transported to emergency medical facilities by police and private vehicles. Although the number of traffic responses surpassed the National Safety Council's estimates for 1974, it should be noted that the number of responses probably included some undetermined number of trips to accidents with only property damage and very minor injuries. Nevertheless, it is reasonable to conclude that the trend lines in Figure 12 indicate that a greater percent of traffic victims was reached each year.

FEDERAL GRANT IMPACT ON EMS SYSTEMS

The catalytic effects of Federal 402 grants for EMS can be clearly seen at the local level. One important indication of this effect is that the State/local share of EMS costs versus the Federal grant remained at an average 70 percent from 1969 to 1974. EMS resource areas supported by Federal 402 funding grew substantially over the time period. EMS support went basically to qualified county, municipal and volunteer rescue services, and earlier analysis indicated that these types of EMS services have increased. Simultaneously, the number of funeral services making emergency responses declined dramatically. 402 grants to private services were very limited during the six years and have now ceased altogether.

An NHTSA study in 1973 found that 37 percent of 402 dollars were used to purchase 2200 ambulances. In each instance, the 402 program required an equal matching of funds by States and localities. Concurrently, the number of EMS ambulances increased from 28 thousand to 31 thousand. The quality of ambulances has also improved; the Federal grant could only be used to purchase ambulances with design improvements that allowed better patient care enroute to the hospital.

One major use of the 402 grant during the six years was to train EMTs in the 81-hour basic care course. The current Assessment notes that by 1974, about 142,000 (or 50 percent of EMTs) had been trained in this 81-hour course. The 1973 study noted that better than 50 thousand persons had used 402 funds for their 81-hour training. A majority of these were EMTs, and based on this we find that at least one-third of the present EMTs with 81-hour training were trained with 402 grant, and that the remainder were trained with State and local funds.

The Federal 402 grant has also been used to improve ambulance communications. The Assessment found that the number of ambulances in communication with a dispatcher increased from 64 percent in 1969 to 87 percent by 1974. The 1973 study of 402 expenditures found that significant amounts of Federal grants went for the purchase of two-way radios for ambulances, and for base station communication systems. State/local support for upgrading communications standards clearly followed the Federal lead. By 1974, 40 percent of all ambulances making emergency responses were able to communicate directly with an emergency medical facility -- compared with only 19 percent in 1969.

KEY EMS FINDINGS

- Federal 402 grants stimulated large State/local EMS traffic-related expenditures from 1969 to 1974. Despite growth in

Federal grants, by 1974 States and localities provided three and one-half dollars for each Federal 402 dollar. Over the six years, the State/local share averaged over 70 percent and it continues to increase. Catalytic effects of the Federal dollar can be clearly seen in State and local funding levels.

- Despite increased Federal, State and local expenditures EMS by 1974 comprised 1.4 percent of overall U.S. highway safety program funding -- up from 0.9 percent in 1969. Tempering this were private contributions to EMS and the value to EMS objectives of volunteer rescue squads. By 1974, conservatively estimated, these provided one dollar out of each three dollars supporting EMS.

- The overall number of EMS services making emergency responses declined from 18,000 to 16,900 in the six-year period. Viewed against population served, the drop represented a decline from 89 services per 1 million persons to 80 services per one million persons.

- The decline in EMS services was generated by fewer U.S. funeral homes making emergency responses, and was partly offset by creation of more volunteer fire and rescue services. Funeral homes dropped from 40 percent of total services to 20 percent from 1969-1974 -- while volunteer fire and rescue groups grew from 30 percent of total services to 50 percent.

- The number of ambulances making emergency responses increased from 28,000 to 31,000 over the six-year period. The quality of ambulances increased as well, as more vehicles began to meet head-room, equipment and other standards which facilitated better patient care. Measured against population served, the number of ambulances increased from 139 to 146 per one million people.

- Within the emergency service framework, funeral service ambulances dropped better than one-half in number during the six years -- while volunteer services increased their number of ambulances from 7,500 to 11,200.

- As the number of ambulances increased, the communications ability of ambulances improved. From 64 percent in 1969, the percent in communication with a dispatcher rose to 87 percent by 1974. The percent in communication with an emergency medical facility rose from 19 percent in 1969 to 40 percent in 1974.

- The number of people able to use 911 or other single telephone number for central dispatch of ambulance and other emergency services also increased during the six-year period. The per-

cent of population covered by this "umbrella service" increased from well under one percent in 1969 to almost four percent in 1974.

- Emergency medical technicians increased from 220 thousand in 1969 to better than 280 thousand in 1974. This represents nine EMTs per ambulance in 1974 versus 7.75 in 1969 -- an 18 percent increase in operational staff.

- Ambulance EMTs with 81-hour emergency care training (or equivalent) increased from 28 thousand to 142 thousand by 1974. This means that half the personnel now on emergency response ambulances have taken an 81-hour or equivalent training course. This is a significant improvement in the capability for treatment of victims.

- Urban population able to be reached by an EMS crew in seven minutes or less remained constant at 97 percent plus from 1969 to 1974. Constructing a similar rural national response estimate proved problematic due to a multitude of geographic differences in rural towns and counties. Observations for the sample sites produced these findings: communities with less than 2500 persons ranged from 50 to 100 percent population coverage within 30 minutes in both 1969 and 1974; and unincorporated areas regardless of size varied from 25 percent to 100 percent coverage in both 1969 and 1974.

- Improved ambulances, EMTs training and communications helped to increase the number of emergency responses from 1969 to 1974:
  - from 8.8 million up to 12.2 million in total responses.
  - from 1.3 million up to 2.3 million traffic responses.

  The percent of traffic-related responses has increased from 15 percent to 19 percent.

- The average number of all responses per ambulance climbed from 310 to 400. Simultaneously, the average number of traffic responses per ambulance rose from 50 to 80. Traffic responses per 100 million vehicle miles of travel increased from 120 to 187, and traffic responses per 1000 licensed drivers increased from 12 to almost 19.

- EMS operational capability versus the various estimated levels of traffic accident injuries which must be responded to, has improved since 1969. In each succeeding year measured, EMS crews reached a greater portion of U.S. traffic accident victims. In 1974, traffic responses for the first time apparently exceeded the minimum response demand represented by the National Safety Council's estimated auto disabling injuries.

traffic safety education

Traffic safety education encompasses more areas than just driver education. Generally, more and more state education departments are making educational materials available to school districts to help develop safe behavior in students as pedestrians, bicyclists, school bus riders and motorcyclists. The age range of the students reached is as broad as the scope of the subject matter, beginning with kindergarten and carrying through high school. The traditional driver education courses, combining classroom and behind-the-wheel instruction, are also being supplemented with increasing use of simulators and driving ranges, and to some degree with training in evasive maneuvers.

This chapter on traffic safety education presents the national projections of trends in curriculum availability, student training, instruction, and funding. There will be brief analyses of these trends in the following sections, bringing in appropriate data from a previous Assessment1/ and other sources, but basically relying on the numbers to tell their own story.

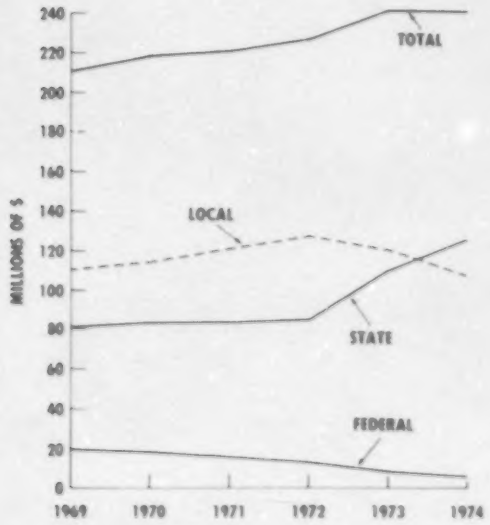
SOURCES OF DRIVER EDUCATION FUNDING

Between 1969 and 1974, the total funding for driver education (in 1974 dollars) increased 15% from $211 million to $242 million (see Figure 1). While total funding increased, Federal fund (Section 402) expenditures gradually decreased, and local expenditures remained about level, first rising and then falling back to the original level. The increase in total funding was borne by state governments, with their portion increasing from $80 million to $126 million, due primarily to increased State reimbursements for driver education to school districts.

1/ Assessment of selected State and Community Programs (the 402 Assessment).

FIGURE 1

EXPENDITURES ON DRIVER EDUCATION
1969 - 1974



These changing patterns of funding during this period are clearer in percentage terms, as the Federal fund portion went from 8% to 3%, local expenditures decreased from the original 52% to 46%, and state expenditures increased from 38% to 52% of the total.

CURRICULA AND INSTRUCTORS

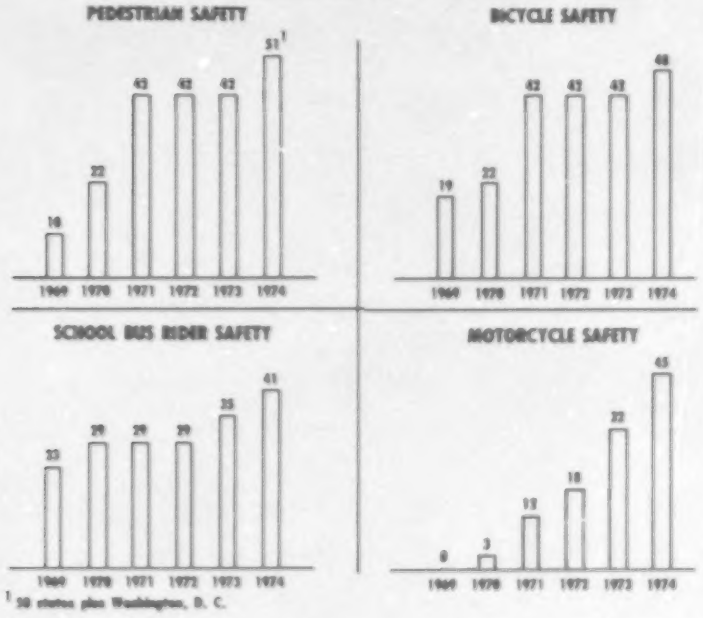
Curricula Available

Between 1969 and 1974 the number of States making curriculum materials available for use in public schools increased substantially (Figure 2) according to the sample data. All States and the District of Columbia now have a pedestrian safety curriculum of some kind, while only ten States had one in 1969. The rapid increase in use of bicycles and motorcycles has stimulated safety training for both areas. Motorcycle curricula are now available in 45 States, 2 1/2 times as many as in 1972 (18) and an even larger increase considering that there were none in 1969. Forty-eight States

have some form of bicycle curriculum, compared with nineteen States in 1969. The stimulus to these areas is likely due to a combination of the increased accidents and fatalities among cyclists, the energy crisis, and the continuing efforts at local, State and Federal levels to press for greater safety. These safety efforts also probably explain increases in school bus rider safety curricula, increasing from 23 States in 1969 to 48 in 1974.

FIGURE 2

NUMBER OF STATES OFFERING CURRICULUM



[1] 50 states plus Washington, D. C.

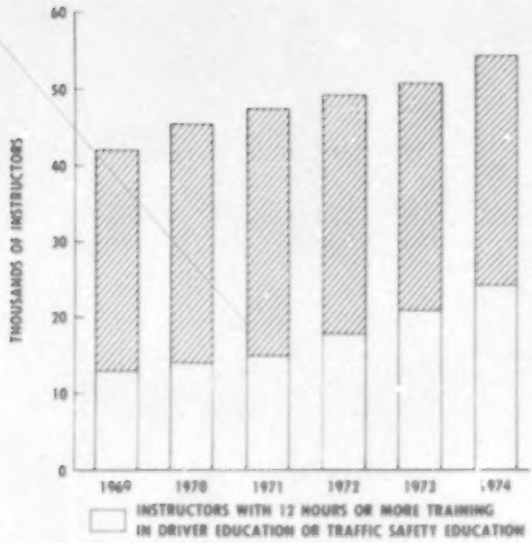
Instructors

More instructors are teaching driver education, rising from 42,000 in 1969 to 54,500 in 1974 (see Figure 3.). The number of instructors has also increased in relation to the eligible student population, going from 12.1 per thousand eligible students to 14.5, indicating a greater capacity among school systems to provide driver education training. This greater capacity has been used, as the number of students trained annually by each instructor has remained at about 60 during the entire period.

FIGURE 3

CERTIFIED INSTRUCTORS

TOTAL AND THOSE WITH 12 HOURS TRAINING



While the foregoing basically indicates one limitation on the quantity of training, some degree of quality can be indicated by increased training of these instructors in driver or traffic safety education. The percentage of instructors having had 12 or more semester hours of training in this area has increased from 31% to 44%. According to an earlier Assessment, a total of $3.7 million was spent (93% from Federal funds) on scholarships, workshops and seminars for 23,200 instructors. This indicates that over 40 percent of these 54,500 instructors have received some Federally funded (Section 402) training in addition to other training they may have received.

DRIVER EDUCATION INSTRUCTION

There has been a continuous increase in the number of students receiving driver education instruction, both in absolute numbers and as percentages of eligible students (those enrolled in school). The overall trends (Figure 4) in driver education training show the increasing proportions of students receiving various modes of training. These modes are not mutually exclusive, i.e., a student may be trained on both a range and a simulator. The increase in simulator and range training for students in driver education is shown in Table 1.

FIGURE 4
DRIVER EDUCATION TRENDS

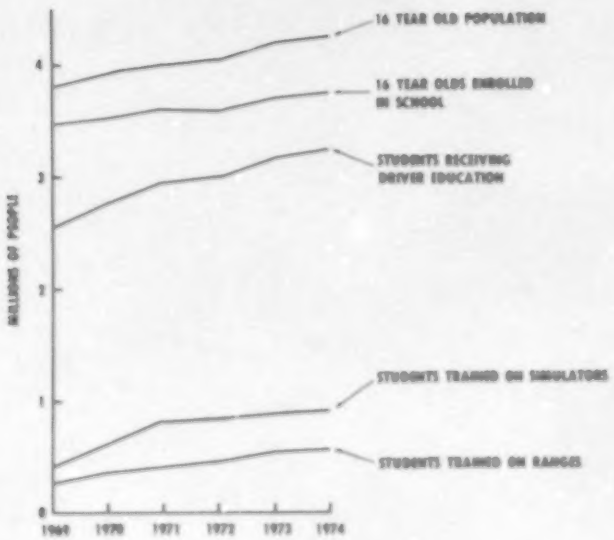


Table 1

Student training By Mode
As a Percent of Eligible Students

	1969	1972	1973	1974
Trained on simulators	12	24	24	25
Trained on range	8	13	15	15
Trained in evasive manuevers	1	2	2	2

Table 2 shows the annual increase in students receiving one or more of the modes of training, when compared to the increase in total eligible students. These increases in training were largely made possible by the number of instructors increasing comparably to the number of students trained. While the most rapid increase by any mode of training was in evasive maneuvers and skid control, this mode was still limited to only 66,400 students in 1974, up from 28,000 in 1969.

Table 2

Growth Rates
Students vs. Instructors

Students	Number (Thousands) 1969	1974	Annual Growth Rate %
Eligible Students	3,480	3,740	2
Students Trained (30 & 6)	2,540	3,250	5
Students trained on simulators	401	927	15
Students trained on ranges	289	560	13
Students in evasive maneuvers	28	66	16
Instructors			
Total Instructors	42	54	5
Instructors with 12 or more hours training	13	24	13

TRAINING EQUIPMENT

As cited in an earlier Assessment, studies in North Carolina, Minnesota, Alabama and Maryland indicate the tendency of simulators and ranges to reduce costs of instruction. However, at least one study in California shows that unless the use of simulators is well scheduled to avoid idle time and empty seats (for multiple-place simulators) the total cost of instruction per student can actually increase.2/ An examination was made in this Assessment of increases in simulator and range usage to allow comparisons with the greater equipment availability noted in the earlier Assessment. Because of the time frames of the available data and the expectation that a time lag between expenditure and full usage was appropriate, the analysis compares equipment purchased and added to existing resources between 1968 and 1973, to students trained on this equipment between 1969 and 1974.

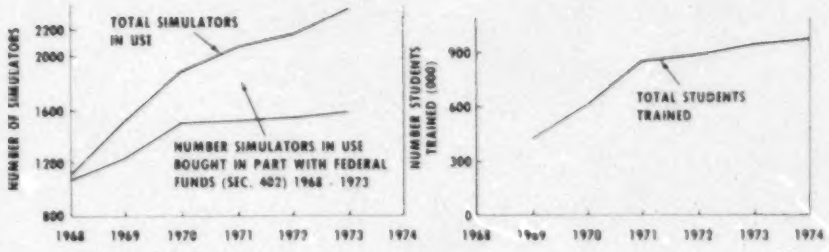
2/ California Driver Training Evaluation Study. Final Report to the Legislature of the State of California. December 1973.

Use Of Simulation

A comparison of the growth in numbers of simulators available and of students receiving this training (Figure 5) shows that the increase in simulator training was largely made possible by purchasing simulators with Federal funds (Section 402). A smaller number of simulators were purchased with State or local funds alone.

FIGURE 5

GROWTH IN NUMBER OF SIMULATORS AND STUDENTS TRAINED ON THEM



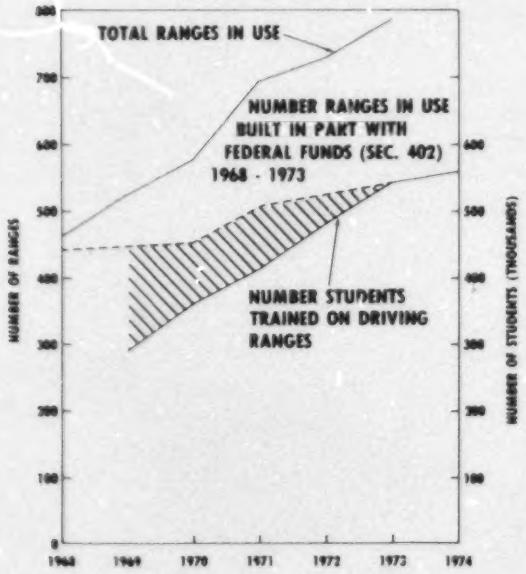
While the number of simulator-trained students increased 131%, the number of simulators increased 94% from 1157 to 2300,indicating improved usage of simulator seating capacity. Of the 1143 new simulators, 670 (61%) were partially financed using Federal funds. The Federal financing on these 670 simulators amounted to $12.5 million (84%) of the total cost of $15 million.

Use of Driving Ranges

A rising trend, similar to that for simulation, exists for greater use of driving ranges (Figure 6).

FIGURE 6

GROWTH IN NUMBER OF DRIVING RANGES AND STUDENTS TRAINED ON THEM



While the number of students trained on driving ranges increased 94%, the number of ranges increased 70% from 464 to 788, indicating again a better per-student usage of the facilities. Of the 324 new driving ranges, 244 (75%) were constructed using Federal funds. This Federal financing was 83% ($7.3 million) of the total cost of $8.9 million for these 244 ranges.

COST PER STUDENT

The cost effectiveness of driver education has improved with a decrease in cost from 83 dollars per student in 1969 to 75 dollars in 1974.

This decreased cost has not been at the expense of less instruction per student, since the annual level of students trained per teacher remained near 60 during the entire period. Nor has it been due to restricting the number of students participating, since the number of students trained increased 28 percent.

Although the data by itself is insufficient to conclude that a causal relationship exists, it appears that the decreasing per student cost exactly paralleled the increased use of simulators and ranges (corre-

lation coefficients are .98 and .85 respectively). This finding, together with the Maryland, North Carolina, Michigan and Alabama studies indicating lower per student costs through reduced instructor time, may indicate that use of simulators and ranges do reduce cost vis-a-vis traditional methods. One cautionary note should be sounded, however, in that the California study and one in Oregon indicated that per student costs can increase when simulation is used.

DRIVER EDUCATION SUMMARY

- In 1974, 3.2 million students received driver education training which was at least the equivalent of 30 hours classroom and 6 hours behind-the-wheel. This represented an increase of .7 million (28%) over 1969.

- Students trained on simulators in 1974 amounted to 927,000, an increase of 131 percent over the 401,000 trained in 1969.

- The more efficient use of simulators for driver education training accounted for much of the growth in the number of students trained. Simulator productivity increased from an average of 350 to 400 students per installation from 1969 to 1974.

- Driving range instruction increased 94 percent to 560,000 in 1974, from 289,000 in 1969.

- Students trained in evasive maneuvers and skid control increased 136 percent to 66,000 in 1974 from 28,000 in 1959.

- These percentage increases of various modes of driver education compared favorably to a 7% increase in the eligible student population.

- The number of simulators in use increased 94 percent from 1157 in 1969 to 2300 in 1974. Of the 1143 new simulators, 670 (61%) were partially financed using Federal funds (Section 402). The Federal financing of these 670 simulators amounted to $12.5 million (84%) of their total cost of $15 million.

- The number of driving ranges in use increased 70% from 464 in 1969 to 788 in 1974. Of the 324 new ranges, 244 (75%) were constructed using Federal funds. These Federal funds amounted to 83% ($7.3 million) of the total cost of $8.9 million for these 244 ranges.

- These increased numbers of simulators and ranges clearly were necessary to allow the significant increase which occurred in students trained by these methods.

- As indicated by the sample, the number of States offering various types of traffic safety education curriculum materials increased substantially. These increases over the 1969-1974 period were:
  - Pedestrian safety increased from 10 to 51 States
  - Bicycle safety increased from 19 to 48 States
  - School bus rider safety increased from 23 to 41 States
  - Motorcycle safety increased from none to 45 States

- The total number of driver education instructors increased 28 percent , from 42,000 in 1969 to 54,000 in 1974. This represents an increase from 12.1 teachers per thousand eligible students to 14.5.

- The number of driver education instructors with 12 or more semester hours of driver education or traffic safety education training increased 85 percent (from 13,000 to 24,000) over the same period. This increased the proportion of total instructors with 12 hours training from 31 percent to 44 percent.

- The pattern of driver education funding changed between 1969 and 1974, with the major burden shifting from the localities (52% to 46% of total cost) to the States (38% to 52%), and Federal funds decreasing throughout (8% to 3%).

- The cost effectiveness of driver education has improved, as costs per student decreased from 83 dollars in 1969 to 75 dollars in 1974. Although the data is insufficient to conclude a causal relationship exists, the increasing use of simulators and ranges paralleled the decreasing per student cost. Correlation coefficients are .98 and .85, respectively.

driver licensing

The Highway Safety Act of 1966 states that each State should establish programs "...to improve driver performance... driver testing to determine proficiency to operate motor vehicles, driver examinations (both physical and mental) and driver licensing..." These programs were to ensure that only motorists able and willing to drive safely and observe State traffic codes and laws are allowed the privilege of driving. To do this, State programs have been guided by the NHTSA Highway Safety Program toward four fundamental goals:

1. To grant driving privileges only to persons qualified to drive;
2. To identify promptly those who do not drive safely;
3. To influence and help individuals become safe drivers; and
4. To deny driving privileges to those who cannot or will not drive safely.

In this chapter, national projections are presented on some of the State activities designed to achieve these four goals. These projections measure the performance, trends, and shifts in emphasis of the driver licensing system from 1969 to 1974. The areas measured are:

- The extent to which certain procedures are used to make testing and licensing more efficient and effective;
- The relative emphasis licensing agencies place on different methods designed to improve driving behavior; and
- The cost of the driver licensing program.

TESTING AND LICENSING OF DRIVERS

Automated Testing

Between 1969 and 1974 the number of licensed drivers increased 16 percent to 125 million - a rate of growth more than three times that of U.S. population. The resulting increase in licensing workload has

led States to seek ways of making the driver licensing process more efficient and economical - including the use of automated testing equipment. In 1974, 25 States were using automated equipment for other than vision testing, representing a five-fold increase since 1969.

TABLE 1

Number of States using Automated Testing

1969	1970	1971	1972	1973	1974
4	8	11	14	20	25

While the number of States using automated equipment provides some measure of its use, the extent of automation can also be measured by the percentage of testing stations which are automated. However, national projections were not made from the sample data (Table 2), because most of the 10 States surveyed did not switch to automated testing between 1969 and 1974.

TABLE 2

Automated Testing Stations
In 10 Sample States

	1969	1974	Percent Change
Driver License stations with automated testing	48	50	2%
Total driver license stations	741	749	1%
Percent of stations with automated testing	7.6%	7.9%	

As Table 2 shows, within the sample States the use of automated testing equipment for other than vision testing is slowly increasing but is still not extensive.

Selected Licensing Procedures

The NHTSA driver licensing standard calls for States to institute a system of classified licenses, medical advisory boards and periodic driver reexamination.

Classified licenses help to ensure that a driver licensed to operate one type of vehicle, cannot drive another type on which he or she has not been tested and proven able to operate safely. Twenty four States used classified licenses in 1974, an increase of seven since 1969.

TABLE 3

Number Of States Using Classified License [1/]

1969	1970	1971	1972	1973	1974
17	18	20	21	22	24

Medical advisory boards recommend standards for screening license applicants (including renewals), and for rejecting applicants with physical or mental characteristics which would interfere with safe vehicle operation. Medical advisory boards also provide final decisions on licensing questions of a strictly medical nature. The number of States with medical advisory boards increased from 36 in 1969 to 43 in 1974.

TABLE 4

Number Of States With Medical Advisory Boards

1969	1970	1971	1972	1973	1974
36	37	39	40	42	43

Periodic reexamination of drivers, usually at the time of license renewal, is designed to detect changes, such as in vision, which may impair driving ability. Some States also retest drivers for knowledge of traffic rules. The number of States requiring some form of periodic driver reexamination increased from 29 in 1969 to 35 in 1974.

Table 5

Number of States
With Periodic Driver Reexamination

1969	1970	1971	1972	1973	1974
29	30	31	33	34	35

These changes in procedures for testing and licensing help to make the entire process more efficient, as with automated testing, and more

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1/ One of the States counted in each year has a statute authorizing classified licenses but it is not implemented.

effective in culling out unsafe drivers or applicants, which is the intent of periodic reexamination, classified licenses, and medical advisory boards.

DRIVER IMPROVEMENT ACTIONS

The following discussion of driver improvement trends is based on a composite State process and therefore tends to be more complete than present driver improvement procedures in most States.

In a typical process, licensing agencies use a system of point assignment, based on type of traffic violation, to identify and take action against repeat violators. Once a driver has enough points to be identified as a problem, a warning letter is usually sent advising the driver about his record and warning of more serious consequences if more violations occur. These consequences can include the possible loss of his license, as is the case in most States, and even a prison sentence in some States with habitual offender laws. A warning can also be given during a personal interview but interviews are used primarily to counsel a driver on how to improve his driving behavior and to determine if a specific improvement action is necessary.

Final actions are taken when certain point limits are reached as a result of cumulative violations. For example, the driver can be sent to an improvement school or to a discussion or therapy group; be put on probation; or have his license suspended or revoked. In most States[2/], the driver can request a formal hearing by the licensing agency before the action is taken.

Warning Letters and Interviews

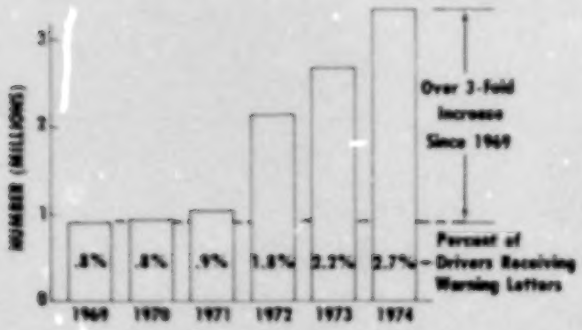
Over 3.3 million drivers, or one of every 37 licensed, received a warning letter in 1974 (Figure 1). Warning letters have been the most common type of action in recent years, increasing steadily from 0.9 million in 1969, when one in every 125 drivers received one. [3/]

2/ Nine of the 10 sample States permit a hearing for review of the recommended action.

3/ Warning letters do not include notices of suspension, revocation or probation which are also generally sent by mail.

FIGURE 1

WARNING LETTERS



Personal interviews are used much less frequently than warning letters fluctuating nationally between 45 and 70 thousand annually (Table 6). However, since only 5 of 10 States surveyed use personal interviews and two of these States had wide fluctuations, the actual number of interviews nationally is uncertain.

TABLE 6

Personal Interviews
(Thousands)

1969	1970	1971	1972	1973	1974
64	52	62	45	58	70

Once a driver is convicted of a traffic violation, the licensing agency can assign the "points" which eventually result in the driver receiving a warning letter - if the State uses warning letters. The convictions, points and warning letters can then be viewed as part of a chain of events with a direct relationship between each. Since, however, there is no data on the total number of points assessed, convictions and warning letters must be compared directly to identify any changes in the degree of emphasis licensing agencies placed on warning letters. This emphasis might be measured by comparing the number of warning letters sent to drivers with the number of convictions. Table 7 presents the number and increase in convictions and warning letters, expressed both in actual numbers and per thousand licensed drivers.

TABLE 7

Convictions and Warning letters

	1969	1970	1971	1972	1973	1974	Average Annual Increase
Total convictions (millions)	20.5	22.1	23.9	26.3	27.9	29.2	
Increase over prior year	-	8%	8%	10%	6%	5%	7%
Warning Letters (millions)	.90	.91	1.05	2.14	2.67	3.33	
Increase over prior year	-	1%	15%	115%	23%	22%	35%
Convictions per 1000 licensed drivers	189	198	209	222	229	233	
Increase over prior year	-	5%	6%	6%	3%	2%	4.4%
Warning letters per 1000 licensed drivers	8	8	9	18	22	27	
Increase over prior year	-	0%	13%	100%	22%	23%	32%

If the national emphasis on warning letters remained the same, then, as the convictions per 1000 drivers increased, so too should the warning letters per 1000 drivers. This increase did occur, but instead of increasing at about the same 4.4 percent rate as convictions, warning letters increased at a much greater annual rate of 32 percent, indicating the reliance of most States on warning letters as a deterrent.

Table 8 also points out the sharp increase in warning letters in 1972. Two of the 10 States surveyed began using warning letters in 1972. In addition, one of the States which had been using warning letters more than doubled the number sent, with installation of a new system.

Table 8

Number of Sample States using Warning Letters
(10 State Sample)

1969	1970	1971	1972	1973	1974
6	6	6	8	9	9

Other Driver Improvement Actions

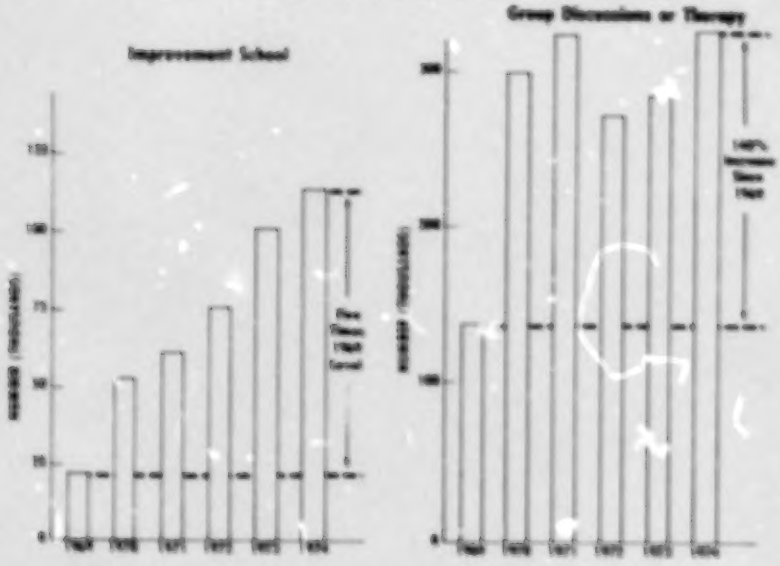
Intermediate actions are taken when a driver's accumulated points reach a predetermined level which is beyond the level at which the licensing agency sends out a warning letter. When the licensing system identifies an individual as reaching this point, a driver improvement analyst reviews the driving record to determine what action would be appropriate. A driver may be sent to an improvement school to improve driving skills and knowledge, or to discussion or therapy groups to help identify and treat the causes of bad driving behavior. Traffic court judges can also order drivers to participate in these remedial programs.

As shown in Figure 2, there has been a five-fold increase in the number of drivers sent to improvement school -- from 22,000 drivers referred in 1969 to 112,000 in 1974. Although the growth in numbers is significant, this action is not frequently taken since less than one in every thousand drivers was sent to an improvement school in 1974.

The number of drivers sent to discussion or therapy groups has increased almost one and a half times since 1969 -- from 137,000 drivers to 326,000 in 1974 (Figure 2). Most of this increase, however, had occurred by 1970, with only minor changes since then in the use of these programs.

FIGURE 2

DRIVERS SENT TO IMPROVEMENT SCHOOL, GROUP THERAPY OR DISCUSSIONS



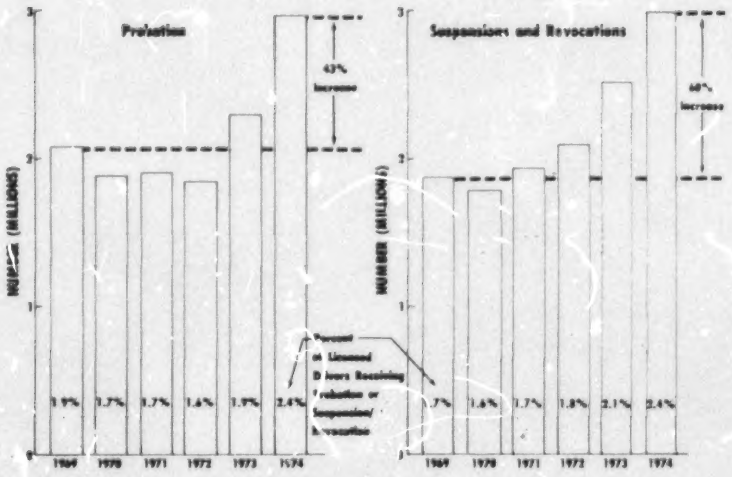
A driver will be put on probation, in lieu of suspension, when the licensing agency feels the driver is a good risk to avoid further traffic convictions and accidents. The driver's license is normally suspended when other actions by the licensing agency have failed to result in an improved driving record. Revocation of the driving privilege is usually based upon a determination that the license should not have been issued, such as for fraudulent identification or birth records, or for specific violations such as drinking driving.

Almost 3 million drivers, or one in every 42 licensed, were put on probation in 1974. This was a 43 percent increase over the 2.1 million drivers put on probation in 1969 (Figure 3). While licensing agencies today use warning letters more often than probation, probation was used over twice as often as warning letters in 1969, when it was the most common action.

The number of drivers receiving a suspension or revocation reached 3 million in 1974, a 50 percent increase over the 1.9 million of 1969 (Figure 3).

FIGURE 3

DRIVERS RECEIVING PROBATION, SUSPENSION, OR REVOCATION



If the total 43 percent increase in probation is compared with the 42 percent increase in convictions over the same 1969-1974 period, it is apparent that the emphasis licensing agencies place on probation was no higher in 1974, relative to convictions, than it was in 1969. For unknown reasons, however, the use of probation actually decreased between 1969 and 1972. All of the increase in probation occurred in 1973 and 1974.

There was a 12 percent increase in suspensions or revocations between 1969 and 1972 which was much less than the 28 percent increase in convictions over the same four years. This comparatively small increase may have been due to a loosening of procedures and/or possibly a lack of facilities and personnel to expand the use of this action. Almost the entire 60 percent increase in suspension and revocation, illustrated in Figure 3, came in 1973 and 1974 when its emphasis within licensing agencies apparently increased.

Hearings are conducted by licensing agencies when a driver wishes to appeal an action taken against him. Court-ordered actions are not subject to appeal at the licensing agencies. As shown in Table 9, more than 2 1/2 times as many drivers requested a hearing in 1974 (296,000) as requested one in 1969 (117,000). It should be noted that the percentage of drivers appealing actions increased, but did not exceed 5 percent between 1969 and 1974. This low percentage implies that drivers either

realize the licensing agency had ample justification for their action, or feel that they have no chance of winning.

TABLE 9

Hearings

	1969	1970	1971	1972	1973	1974
Number of Hearings (thousands)	117	133	153	197	252	296
Percent of actions[4/] Appealed	2.8%	3.3%	3.6%	4.6%	4.8%	4.6%

Trends in Driver Improvement Actions

There has been a significant shift in the actions taken by licensing agencies against repeat offenders. As shown in the prior sections, there has been much greater relative emphasis placed on "stopping" repeat offenders earlier, by sending out more warning letters and by sending more drivers to improvement school.

This greater use of early intervention, before a driver accumulates enough points to require a more serious final action, was intended to improve the drivers behavior sufficiently to avoid, or at least reduce the frequency of future violations. Those drivers who were unwilling to avoid these future violations would be identified and more serious actions used.

This increased emphasis on intervention with warning letters was accompanied through 1972 by reduced emphasis on probation, suspension and revocation. After 1972, however, the States renewed their emphasis on these final actions to or above the 1969 level relative to convictions, supplementing the increased emphasis on warning letters.

4/ These actions are defined to include: suspensions, revocations, probations, and attendees of improvement schools and discussion or therapy groups.

COST OF DRIVER LICENSING

Driver licensing cost $180 million in 1974 (Table 10). This cost includes all the State activities involved, from examining and licensing applicants to identifying and taking action against unsafe drivers.

This $180 million represented a 36 percent increase, in 1974 dollars, over the $132 million expended in 1969. The cost per driver increased 18 percent from $1.22 in 1969 to $1.44 in 1974. This increase in both total and per driver costs may be due to several factors:

- Initial capital outlays for expansion of the licensing system, including computers and automated testing equipment to handle more drivers.
- Expanded use of driver improvement actions, with increasing percentages of drivers subject to intervention (i.e., warning letters 2 1/2 times the 1969 level).
- More frequent driver reexamination and use of medical advisory boards.
- Greater use of classified licenses, requiring different tests for each class of vehicle a driver wants to operate.

Federal fund (Section 402) obligations in support of driver licensing decreased from $7.9 million in 1969 (6.0 percent of total) to $2.4 million in 1974 (1.3 percent of the total). This decrease may be due to States increasing license fees to be more in line with actual operating costs, and shifting the Federal funds to other programs.

TABLE 10

Driver Licensing Expenditures or Obligations
(in millions of 1974 dollars)

	1969	1972	1973	1974
Total State expenditures	132	172	183	180
Federal fund (Sec. 402) obligations	7.9	4.4	1.8	2.4
Federal percent of total	6.0%	2.6%	1.0%	1.3%

DRIVER LICENSING SUMMARY

- The number of States using selected procedures to make the testing and licensing process more efficient and effective increased. The increases over the 1969-1974 period were:
  - Automated (non-vision) testing equipment increased from four to 25 States
  - Classified licenses increased from 17 to 24 States
  - Periodic driver reexamination increased from 29 to 35 States
  - Medical advisory boards increased from 36 to 43 States

- There has been a significant shift in the actions taken by licensing agencies against repeat offenders. The new emphasis is on early intervention against repeat offenders, by sending out more warning letters and by sending more drivers to improvement school. The emphasis on more serious actions, like probation suspension and revocation, approximates or somewhat exceeds the 1969 level relative to convictions.

- Over 3.3 million drivers received a warning letter in 1974, 2 1/2 times the 0.9 million drivers who received on in 1969. Warning letters are used in more States than in 1969 and are now used more often in States which had them in 1969, both in absolute numbers and relative to convictions.

- Among intermediate driver improvement actions:
  - The number of personal interviews showed no real growth, fluctuating between 45 thousand and 70 thousand annually.
  - Drivers sent to improvement school increased five-fold, from 22,000 in 1969 to 112,000 in 1974.
  - The 326,000 drivers sent to discussion or therapy groups in 1974 were 2 1/2 times the 137,000 referred in 1969. Most of this growth, however, had occurred by 1970.

- Almost 3 million drivers were put on probation in 1974, a 43 percent increase over the 2.1 million of 1969. This 43 percent increase in probation matched the 42 percent increase in convictions over the same period, indicating no change in the emphasis on probation over that time.

- The number of drivers receiving license suspension or revocation reached 3 million in 1974, a 60 percent increase over the 1.9 million of 1969. This 60 percent increase, when compared to the 42 percent increase in convictions represents greater emphasis on suspension and revocation during this period.

- For unknown reasons, almost all of the increase in probation, suspension, and revocation occurred in 1973 and 1974.

- The number of drivers requesting hearings by the licensing agency increased from 119,000 in 1969 to 296,000 in 1974, but the percentage of appeals remained under five percent over that period.

- Total driver licensing expenditures increased 36 percent, in 1974 dollars, from $132 million in 1969 to $180 million in 1974. The cost per driver of the licensing system increased 18 percent, from $1.22 in 1969 to $1.44 in 1974.

- These increases in both total and per driver cost were due to:
  - 16 percent more drivers
  - initial capital outlays to expand the licensing system, including computers and automated testing equipment.
  - higher percentages of drivers subject to licensing agency action (i.e. warning letters 2 1/2 times the 1969 level)
  - more frequent driver reexamination
  - greater use of medical advisory boards
  - greater use of classified licenses.

- Federal funds (Section 402) obligations for driver licensing decreased from $7.9 million in 1969 to $2.4 million in 1974. This decrease may be due to increasing State license fees to be more in line with actual cost and shifting the Federal fund to other programs.

periodic motor vehicle inspection

Motor vehicle equipment failures create a possible risk of accident exposure to the traveling public. Such failures generally develop through normal wear or maladjustment of motor vehicle equipment and may not be readily detectable.

Motor vehicle inspection is aimed at maintaining the "safety quality" of vehicles on the road. To do this, components such as wheel assemblies, tires, suspension systems, steering, brakes and lights must be periodically inspected to determine if they meet minimum vehicle safety criteria.

In 1974, nearly $100 million was spent to inspect over 70 million cars in 31 States and the District of Columbia. Every third car inspected was rejected. Twelve additional States conducted random inspections or inspected vehicles only on title transfer. This accounted for another 8 million inspections. Almost 250 thousand certified inspectors - both full-time State employees as well as licensed service station mechanics - performed inspections.

The following brief discussion presents the results of an Assessment of 10 sample States, and additional information obtained for all States, relating to existing types of inspection, number of inspections and rejections, and inspections and costs.

TYPES OF INSPECTION

Inspection systems vary in terms of what is inspected, who performs the inspection, and the frequency of inspection. Vehicle systems considered to be critical to safety and usually inspected include wheel assemblies, lights, tires, suspension systems, steering and braking systems. The type of inspection, usually referred to in terms of frequency or event includes: inspection on title transfer, random or spot inspection, and periodic motor vehicle inspections. Periodic systems are either annual or semiannual.

In 1969, nine States used spot or title transfer inspection, 25 States required annual, and seven conducted semiannual inspections. By 1974,

three additional States had adopted spot or title transfer inspection. Over the six-year period the number of States (32) requiring periodic motor vehicle inspection remained the same - see Figure 1. It should be noted that in 1967, as a result of the Highway Safety Act, 10 States passed laws for PMVI.

FIGURE 1

MOTOR VEHICLE INSPECTION

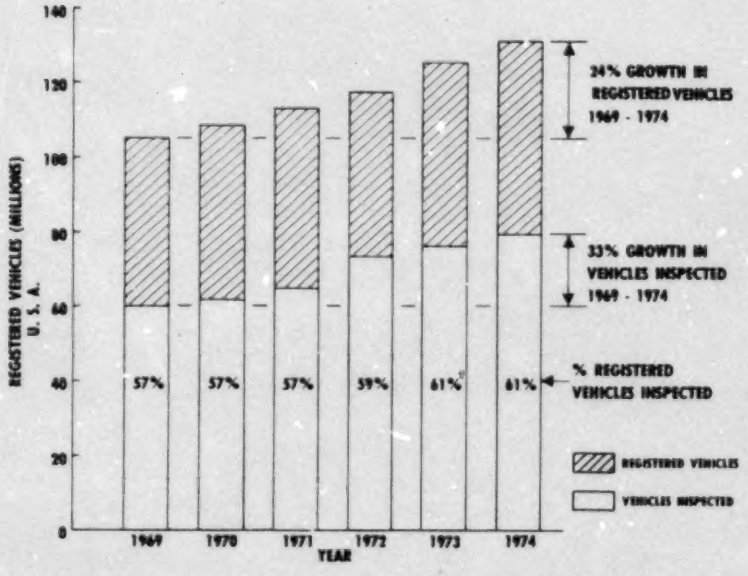
Type of Inspection	1969			1974		
	No. of States	Registered Vehicles (Millions)		No. of States	Registered Vehicles (Millions)	
		Total	Inspected		Total	Inspected
No Inspection	10	23	0	7	25	0
Spot/Title Transfer	9	25	3	12	35	8
Annual Inspection	25	45	45	25	57	57
Semiannual Inspection	7	12	12	7	14	14
Total	51	105	60	51	131	79
Percent Of Registered Vehicles Inspected	57%			61%		

VEHICLES INSPECTED AND REJECTED

Figure 2 shows that the proportion of registered vehicles inspected has increased slightly since 1969 (57 percent to 61 percent). The overall growth of 33 percent in vehicle inspections between 1969 and 1974 exceeded the 24 percent increase in total vehicles registered over the same period.

FIGURE 2

VEHICLES INSPECTED



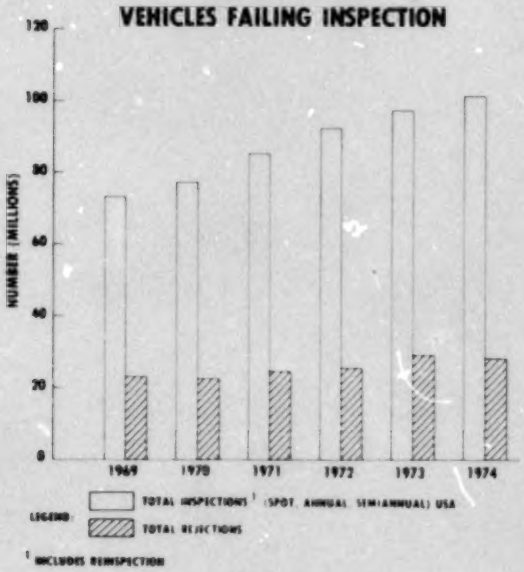
The number or rate of vehicles failing inspection can be considered one "safety quality" measure for vehicles on the road, despite the variety of inspection requirements that exist. Vehicles failing inspection rose from 23 million in 1969 to 29 million in 1974; these rejections represent about 30 percent of all inspections as shown in Figure 3.

These are gross measures, and failures as a result of spot or title transfer inspections cannot be considered equivalent to rejection criteria followed under periodic vehicle inspection systems.

FIGURE 3

REJECTIONS

VEHICLES FAILING INSPECTION



Based on the comparison of total inspections performed to the number of registered vehicles in States with annual and semiannual inspection, the reinspection rate is approximately 10 percent. The adjusted total reflects the number of vehicles inspected for the first time, every 6 or 12 months.

The rejection rate for annual inspection has ranged between 27 and 32 percent. The rate for semiannual inspection is higher - between 36 and 40 percent (see Figure 4). Based on the sample States there has been little change in the rejection rates over the past six years.

FIGURE 4

REJECTION RATES

VEHICLE FAILURE RATES FOR ANNUAL AND SEMIANNUAL INSPECTION SYSTEMS

	PERCENT FAILURE AT FIRST INSPECTION					
	1969	1970	1971	1972	1973	1974
ANNUAL INSPECTION	32	29	27	28	32	28
SEMIANNUAL INSPECTION	40	36	39	36	37	36

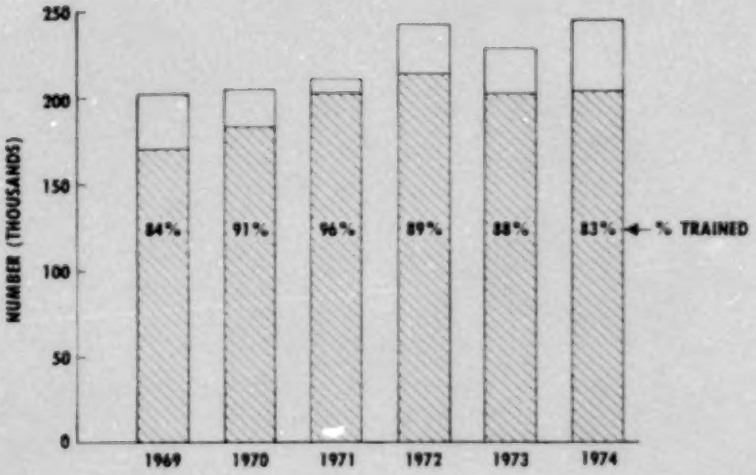
INSPECTION RESOURCES

Thirty-three States used service stations or garages, licensed by the State for inspections and five States have State-operated systems. There are two States with a few State operated facilities but most of the inspections in these States are done by service stations. In addition, two States perform inspections, using State facilities- but these operations are confined to only a few cities.

In 1974 there were 250 thousand vehicle inspectors, an increase of 50 thousand over 1969 (See Figure 5), and includes everyone certified to perform inspections: State employees, service station mechanics and State troopers. Between 83 and 96 percent have received some form of training, although much of it falls short of the training level sought by NHTSA vehicle-in-use standards.

FIGURE 5

TOTAL CERTIFIED INSPECTORS



Inspection Costs

The total cost of periodic motor vehicle inspection was estimated at $95 million in 1974, an increase of $12 million over 1969. These values, though presented to the nearest one million dollars are only an order of magnitude useful for an overview of program size and trends.

The estimates are a combination of State government costs for the few State-operated programs, and administrative costs in States where periodic inspections are done by service stations and garages. The cost data collected from the sample States - representing a range of inspection systems and procedures - were used in the estimate. In addition, the total cost includes an estimate of the cost to service stations - in States where they are licensed to perform inspections. It was assumed that the cost per inspection to service stations was about the same as that incurred by a State operated inspection facility. Recognizing that while many variables influence such costs in each State, the total so obtained helps gain a perspective of program size.

In 1973 and 1974, under authority of the Motor Vehicle Information and Cost Savings Act, approximately $2 million of 403 funds were expended to initiate the Diagnostic Inspection Demonstration program (this program was not studied as part of the Assessment).

Since 1969 there has been a gradual decrease in Federal funds ($1.8 million in 1969 to $400 thousand in 1974) allocated to periodic motor vehicle inspection. In terms of estimated total expenditures, these funds amount to less than one percent (.4 percent by 1974). The grant money was used by States primarily for training inspectors and developing information systems for documenting and analyzing vehicle inspection data.

Vehicle-in-Use standards were issued by the NHTSA in 1973, and with them both the creation and upgrading of periodic motor vehicle inspection was emphasized. The bases for decisions to implement VIU standards in the States will rely, in part, on an analysis of available data.

SUMMARY

- Over the six-year period, 1969-1974, the number of States conducting periodic motor vehicle inspections remained the same, although three States began spot or title transfer inspection.

- The overall growth in the number of vehicle inspections was 33 percent between 1969 and 1974 while the vehicle population increased 24 percent.

- In 31 States plus D.C. requiring periodic inspection, more than 70 million vehicles were inspected in 1974 - over half the registered vehicles in the U.S. An additional 8 million vehicles were inspected in 12 States which have spot or title transfer inspection programs.

- About 30 percent of the vehicles under an annual system fail inspection, while 38 percent of those inspected semiannually failed. These rejection rates were stable over the six-year period.

- Most of the 250 thousand inspectors are service station employees certified by the States to conduct vehicle inspection. Over 80 percent of them have undergone some type of training.

- A minimum of $83 million was spent in 1969 for periodic motor vehicle inspection reaching at least $95 million in 1974. These costs are estimates for State-operated and licensed service station-operated inspection systems.

- Federal funds for PMVI decreased from $2 million in 1969 to $400 thousand in 1974, or about one percent of total expenditures for PMVI in 1969, to less than a half percent 1974. Most of these grant funds were used by the States for training inspectors and developing information systems. Data analysis serves as an input to determine inspection performance and vehicle safety quality.

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Janice J. Henley, Sec'y to Capt. Joseph Bason, Police Dept.
Ron Hines, Manager, Alachua Ambulance Service
Pat Jamerson, Dir., Alachua Co. Dept. of Public Safety
Harold Martin, Dist. Spvr., Florida Parol/Probation Commission
Robert S. Mitchell, Lt., Police Dept.
Mrs. Sherber, Asst. to Dr. Robert Klein, County Pathologist
Lt. Snowden, Police Dept.
Jan Watkins, Supvr. of Traffic Division

Panama City, Florida

Francis Burke, Coordinator, DWI School Counseling
Dr. Monaco, City Medical Examiner, Bay Memorial Hospital
Mr. and Mrs. Morris, ABC Ambulance
Mr. Resmondo, City Medical Examiner, Bay Memorial Hospital
Charles Roberts, Lt., Police Dept.
Mr. Wilson, Wilson's Funeral Home

Pensacola, Florida

Mr. Clevenger, Northwest Florida Ambulance-Service
Joyce Cowan, Judicial Clerk Supvr., Criminal Div., Escambia Co. Ct.
Lt. Hanor, Police Dept.
Bill Hearn, Dir., "Counter Attack" School, Escambia Co. Health Dept.
Mrs. Milstead, Northwest Florida Ambulance-Service
Verna Perdud, Judicial Clerk II, Circuit & County Court - Accounting

Pensacola, Florida - Continued

M. K. Renfroe, Dir., EMS for Escambia Co.
Sgt. Seehy, Police Dept.
Lt. Ward, Sheriff's Office

Tampa, Florida

Jim Algood, Coordinator of EMS,
Hillsborough Co. Dir. of Ambulance Service
Dr. William Blaunt, ASAP Evaluation, CB 1, Univ. of So. Florida
Garry Orr, Statistician/Dispatcher,
Hillsborough Co. Ambulance Service
W. A. Pask, Capt., Dir. of Planning Statistics, Police Dept.
Joe Perex, Clerk, Traffic Div. of Circuit Court
Harry Sheppard, ASAP Program
G. R. Stoner, Traffic Div. of Circuit Court
Judy Walters, ASAP Evaluation

IOWA

Robert F. Tyson, Governor's Representative
Director, Office for Planning & Programming
Lance Faust, Dir., Highway Safety Program,
Office for Planning & Programming
Stan Sterner, Office for Planning & Programming
Chuck Jansen, Office for Planning & Programming

Jerry Beatty, Asst., Office of Iowa Traffic Court Administration
Aurora Berenguel, Statistics Research Analyst, Dept. Public Safety
Dwight T. Carlson, Chief, Driver & Safety Education Section,
State Dept. of Public Instruction
James R. Fisher, Chief License Examiner, Dept. of Public Safety
A. E. Hunter, Supt. of EMS, Dept. of Public Health
Col. Miller (Ret.), Iowa Hwy. Safety Patrol, Dept. of Public Safety
Michael O'Donnell, Supvr. of Motor Vehicle Inspection,
Dept. of Public Safety
John T. Schaffner, Dir., Driver Licensing, Dept. of Public Safety

Cedar Falls, Iowa

Roger Atwood, Chief of Police
Maralee Bell, Clerk, Magistrate Court
Robert Curtis, Captain, Police Dept.
Dale Fitzpatric, N.E. Council on Alcoholism
Frances Harrington, Fire Fighter, Fire Dept.
Mike Reisfsteck, Asst. Chief, Police Dept.

Coralville, Iowa

Andy Hall, Adm. Asst., Mid-Eastern Communities Council on Alcoholism,
Adm. Consultant, Local Alcohol Action Committee
Jeff Petrie, Eight Co. Regional EMS Coordinator, Hoover Health Council
Dolores Rogers, County Auditor, Johnson Co. Auditors Office
Lisa Spencer, Asst. Clerk, Probate Court
James Ward, Director, Johnson Co. Ambulance Service
Paul White, Chief of Police

Des Moines, Iowa

Dale Fredricks, Clerk of the City Court
Bob Hutt, Pres., Capitol City Ambulance
John Jones, Dir., R.D. & E. Des Moines Police Dept.
Tom Tanner, Dir., EMS Response System Association

Ft. Dodge, Iowa

Mrs. Appleton, Dayton Rescue Unit
Vincent Danglar, Vincent Rescue Unit
Dick Forbes, EMS Supervisor, Trinity Regional Hospital
Dale Shepardman, Assistant Chief, Police Dept.

Humboldt, Iowa

Denny Hansen, Pres., Humboldt Volunteer Rescue Squad
Perry Slaiken, Chief of Police

Marion, Iowa

Guy Booth, Magistrate, Linn County
Richard Cagler, Chief of Police
Mr. Harnish, Exec. Dir., Citizens Comm. on Alcohol & Drug Abuse
Harold Mulford, Dir. of Alcohol Studies, University of Iowa
Judy de Pauw, Deputy Clerk, Linn Co. Court
Tim Trosky, Supvr. of Area Ambulance Service, Mercy Hosp. based

Mechanicsville, Iowa

Dale Cook, Dir. of Ambulance Serv., Fire Dept.
Roger Feeese, Attorney, Magistrate Div. of Cedar Co. District Court
Mary Kay Greig, Deputy Clerk, Iowa District Court
Lela Harplett, Deputy Clerk, District Court, Magistrate Div.
Phyllis Lenschaw, Clerk, District Court
Thomas Railsbock, Mayor and Police Chief

Stuart, Iowa

Roger Brown, Clerk of the Court, Guthrie Co. Ct.
Wayne Jones, Chief of Police
Treva Van Landingham, Asst. City Clerk

Waterloo, Iowa

Isabelle Fredrichs , Deputy District Ct. Clerk
Howard Gibbs, Auditor, Black Hawk Co.
Mrs. Glaza, Black Hawk Co. Ct. Auditor
Junior Grimm, Lt., Traffic Div., Police Department
Gil Hansen, Asst. Chief of Police
Basil Libbey, Lt., Ambulance Coordinator, Fire Dept.
Grace McGravey, Traffic Records Clerk, Police Dept.
Dorothy Ross, Auditor's Office

West Des Moines, Iowa

Duane Terpenning, Lt., Asst. Chief of Police

NEVADA

Howard L. Hill, Dir. of Dept. of Motor Vehicles, Governor's Rep.
John Borda, Hwy Safety Coordinator, Dept. of Motor Vehicles
Wayne Tetrault, Hwy Safety Program, Dept. of Motor Vehicles
Dick King, Hwy Safety Program, Dept. of Motor Vehicles
David Lawson, Hwy Safety Program,
Office of the Highway Safety Coordinator
Rosalind Perry, Office of the Highway Safety Coordinator
Dennis Tatum, Office of the Highway Safety Coordinator

Paul Cohen, Bureau Chief, Council on Drug Abuse & Alcohol
Della Hevine, Principal Clerk, Driver Licensing, Dept. Motor Vehicles
Robert Loud, State Health Division
JimNemeth, Dept. of Education
Raymond Oster, Sergeant, Nevada Highway Patrol
Douglas Stokes, Driver Education Consultant, Dept. of Education

Carlin, Nevada

Carol Denna, Secretary/Dispatcher, Police Dept.
Rod Hannon, Pres., Northeast Regional EMS Council
Chief Larrios, Police Dept.
Hon. Kenneth MacEachern, Judge, City Court

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Elko, Nevada

Dorothy Corta, City Administration Clerk
Rod Hannon, Pres., Northeast Regional EMS Counsil
Edward Lunsford, Justice of the Peace, Judge of the Town Court
Dan Toelour, Chief of Police
Vivian Wallace, Records Officer, Police Dept.
Bill Webb, Ambulance Director, Regional EMS Coordinator

Ely, Nevada

Jack Caylor, Chief of Police
Buzz Gray, Policeman
Loretta Jones, Clerk of the Court, Police Dept.

Henderson, Nevada

Lucille Kubic, Court Administrator, Municipal Court
Gretta Lewis, Dispatcher, Fire Dept.
Don Richard, Chief, Fire Dept.
Wayne A. Stacy, Bailiff, Municipal Court
Tom W. Thompson, Lt., Patrol Commander, Police Dept.
Joe Vetic, Sergeant, Police Dept.

Las Vegas, Nevada

Seymoure H. Brown, Judge, Municipal Court
Louise Conley, Court Clerk, Municipal Court
Jerry Lyons, Southern Nevada Drug Abuse Council
Joan Middleton, Budget Analyst, Police Dept.
Robert E. Mullen, Judge, Municipal Court
Cathy Nevil, Records Supervisor, Police Dept.
Dane Parks, Budget Officer, City Finance Dept.
J. O. Smith, Lt., Uniform Field Services Div., Police Dept.
Cary Von Urquidy, Asst. Dir., Mercy Ambulance Services
Donald H. Weiss, Dir., Police Training Bureau
Dione C. Zales, Coordinator of Alcohol Programs,
Southern Nevada Drug Abuse Council

North Las Vegas, Nevada

Ray H. Daines, Judge, Municipal Court
Billie Edmondson, Municipal Court Clerk
Richard Mayne, Coroner, Clark Co. Health Dept.
Dione E. Zales, Coordinator of Alcohol Programs,
Southern Nevada Drug Abuse Council
Jerry Zohner, Lt., Traffic Div., Police Dept.

Reno, Nevada

Leonard Bonk, Lt., Traffic Div., Police Dept.
Gayle Dodge, Court Clerk, Municipal Court
Marcia Giller, Owner/Director, AIDS Ambulance Service
Ben R. Payne, Dir. of DUI Alcohol Studies, Univ. of Nevada

Washoe County, Nevada

Helen Cormier, Court Clerk
Marcia Giller, Dir., AIDS Ambulance Service
Ben R. Payne, Dir. of DUI Alcohol Studies, Univ. of Nevada
George Ringener, Capt./Adm. Asst., Sheriff's Office

Wells, Nevada

Rod Hannon, Pres., Northeast Regional EMS Ambulance Service
Mary Jean Kidner, Court Clerk, Washoe County Ct.
Charles Rutherford, Chief of Police
Walter M. Thurston, Justice of the Peace, City Police Judge
Bill Webb, Ambulance Dir./Regional Coordinator, Elko Ambulance Serv.

NEW HAMPSHIRE

Thomas A. Power, Coordinator, Hwy Safety Agency, Governor's Rep.
Burton Nichols, Hwy Safety Coordinator

Ernie Baker, Senior Hearing Examiner, Dept. of Motor Vehicles
Frederick Clark, Dir., Dept. of Motor Vehicles
Charles Desmaris, Dept. of Motor Vehicles
Paul Doyon, Dir., State Police
John Groves, Dir., Driver Education Section, Dept. of Education
Ken Hayes, State Police
Ken Lewis, Senior Hearing Examiner, Dept. of Motor Vehicles
Jack Middleton, Statistician, EMS, New Hampshire Div. Public Health
John Muir, Dir., Alcohol Safety Action Project
Clayton Osborn, Asst. Dir., Dept. of Motor Vehicles
Cressy Goodwin, Director, EMS Programs

Boscawen, New Hampshire

Clayton Downing, Chief of Police
Sandre Loughery, Police Clerk
Wayne Nickerson, Dir., Penacook Civil Defense Rescue Squad

Concord, New Hampshire

Sgt. James Moran, Police Officer
Mrs. Petell, Police Records Clerk
Mr. McPhail, Concord Court Clerk

Derry, New Hampshire

Edward Garone, Chief of Police
Barbara Jacobson, Derry Court Clerk
Mr. Taylor, Lieutenant, Fire Dept.

Durham, New Hampshire

Mr. Jewell, Lieutenant, Police Dept.
Judith Johnson, Durham Court Clerk
William Wood, Lieutenant, Fire Dept.

Laconia, New Hampshire

Eugene L. Blake, Lieutenant - Juvenile Officers, Police Dept.
Alice Haynes, Bookkeeper, Laconia District Court
Bruce Marcot, Asst. Manager, Forest Park Ambulance Service

Manchester, New Hampshire

Richard D'Amour, Manchester Court Clerk
John Stips, Chief of Police
Lt. Vaal, Police Dept.

Milford, New Hampshire

Mrs. Gaffney, Clerk, Milford District Ct.
Richard Tortorelli, Dir., Milfort Volunteer Ambulance Service
Kent Williams, Chief of Police

Merrimack, New Hampshire

Gloria B. Litchfield, Sec'y to Chief of Police
Fred Moriarty, Dir., Merrimack Ambulance Service
John Pellatier, Chief of Police
Bill Twombley, Ambulance Attendant & Driver, Merrimack Cen. Station

Nashua, New Hampshire

Walter Bausha, Office Manager, Police Dept.
Raymond Lessaid, Director, United Ambulance Service Inc.
Linda Levesque, Accountant, Police Dept.
William Quigley, Captain, Commander of Services Bureau, Police Dept.
Eugene Tafe, Clerk, Nashua District Court

Raymond, New Hampshire

Marian Lonejay, Dispatcher, Police/Fire

NEW JERSEY

John A. Waddington, Governor's Rep., Div. of Motor Vehicles
Louis R. DeCarolis, Ph.D., Manager, N.J. Office of Hwy Safety,
Div. of Motor Vehicles
Tom Strugala, Senior Hwy Safety Specialist, N.J. Office Hwy Safety
Donald F. Henry, Inspector Liaison Office, N.J. Office of Hwy Safety
Justin Perazza, Financial Analyst, N.J. Office of Highway Safety
Sam Richie, N.J. Office of Highway Safety
Herman Hammerschmidt, Office of Highway Safety
Richard Johnson, Office of Highway Safety

Pinkus Chodosh, Asst. Chief, Vehicle Inspection,
Div. of Motor Vehicles, Dept. of Law and Safety
Robert Damiani, Project Analyst, Alcohol Countermeasures Project,
Div. of Motor Vehicles
Elmer Gombosi, Chief, Bureau of Driver Improvement,
Div. of Motor Vehicles
Ron Hockemeier, Field Rep. EMS, N.J. Dept. of Health
Lt. E. R. Leibe, Dir. of Police, Liaison Bureau, N.J. Police Dept.
Steve Lovett, Pupil Transp. Coordinator, Bureau of Pupil Transp.
John P. McCarthy, Jr., Chief of Ct. Planning, Adm. Off. of the Courts
Maj. Ralph R. Peterson, Asst. Chief, Div. of Motor Vehicles
& Enforcement Bureau
Jim Riley, Field Rep. EMS, N.J. Dept. of Health
W. Patrick Scheffer, Project Coordinator,
Alcohol Countermeasures Project, Div. of Motor Vehicles
Paul W. Selby, Consultant, Traffic Safety Educ., N.J. Dept. of Educ.
Louise Sena, MD, Dir., Office of EMS, N.J. Dept. of Health

Absecon, New Jersey

Harriet E. Bianca, Municipal Court Clerk
William E. Hurd, City Clerk Administrator
Lt. Lopresti, Police Department
Mary Ann Minetti, Sec'y to Chief of Police

Absecon, New Jersey - Continued

Doris Pauciello, Chief, Absecon V F W Volunteer Ambulance Squad
Chief Traggart, Police Department

Camden, New Jersey

Wm. Brand, Board of Trustees Member, 14th Ward Vol. Ambulance Assn.
Albert Carino, Chairman, 14th Ward Volunteer Ambulance Association
Andrew Corea, Purchasing Agent, City Hall
Valerie Frick, Violation Clerk, Camden Municipal Court
Patrick Keating, Auditor, Public Safety Dept.
Joseph Kane, Sup. of Traffic Control, Police Dept.
Thomas Kelley, Capt., Traffic Bureau Com., Police-Traffic Div.
Charles Kocher, Lieutenant, Police-Traffic Div.
Capt. McCann, Com. of Inspectional Controls Div., Police Dept.
Sgt. Mentz, Training, Police Dept.
Charles M. Wilke, Acting Coordinator, City of Candem Ambulance Squad
Joseph Yantosik, Supvr. of School Crossing Guards, Police Dept.

Dover Township, New Jersey

Fred Etting, Capt., East Dover Squad
R. E. Fairweather, Safety Officer, Police Dept.
Bill Hayes, Countys Coordinator, Courthouse
Joseph N. McGuire, Dover Township C.D. 1st Aid Coordinator
Pauline Spencer, Office Supervisor, Municipal Court
Charles Thiemann, Patrolman, Police Dept.

Jersey City, New Jersey

Lt. Ray Dillman, Police Dept.
Steven Hammer, Adm. Asst., Jersey City Med. Center Ambulance Dept.
Capt. Robert Shortell, Planning & Research, Fire Dept.
Mr. Turner, Clerk, Municipal & Traffic Courts

Hamilton Township, New Jersey

Carl Bellis, Dir., EMS, Yardville Rescue Squad
Shieeve Barton, Rusling Hose Co. Ambulance & Rescue
Debbie Gottschall, Municipal Court Typist
Marlin Williams, Municipal Court Clerk
Capt. George Zimmer, Police Dept.

Plainfield, New Jersey

Sgt. Ralph Schmeyer, Traffic Section Head, Police Dept.
Don Swarts, Senior Systems Analyst, Police Dept.
Ralph M. Vail, Training Officer, Plainfield Rescue Squad

Randolph, New Jersey

Harold Booser, Chief of Police
Wm. Kerr, Patrolman, Police Dept.
M. Lizun, Lieutemant, Police Dept.
Grace Montemarano, Violations Clerk, Municipal Court
Hans Schwarz, Captain, Rescue Squad

Rutherford, New Jersey

Frank Blakeley, Collector of Taxes, Tax Office
Arthur A. Mann, Deputy Coordinator, Alcohol Countermeasure Project
Division of Motor Vehicles
Foster Miller, Jr., V.P. of Rutherford Civil Ambulance Corp.
Michael J. Nazzaro, Traffic Court Unit, Traffic Dept.
Mildred Zarella, Clerk of the Municipal Court

Waterford Township, New Jersey

Mike Babli, Chief of Police
Ed Hickmann, Commander, Atco Volunteer Ambulance Unit
Phil McGonigle, Patrolman, Police Dept.
Mary Ruhloff, Deputy Township Clerk, Clerk's Office
Samuel S. Valenti, Township Clerk, Clerk's Office
Ruby F. Wilson, Municipal Court Clerk

Woodbridge, New Jersey

Capt. Wm. Burns, Dir., Traffic Operations & Planning, Police Dept.
Sgt. George Curry, Coordinator of EMS, Traffic Operations & Planning
Harold Eversheim, Middlesex Co. Coordinator for
Alcohol Countermeasure Project, Div. of Motor Vehicles
Jenny Ur, Principal Clerk, Municipal Court

OHIO

Richard D. Jackson, Dir. of Transp., Governor's Representative
G. A. Weese, Administrator, Dept. of Transp.
John LeGrand, Dir., Transportation Safety, Dept. of Transp.
Thomas Wheeler, Dept. of Transportation
Larry Welch, Fiscal Officer, Dept. of Transportation

William Christie, Adm. Asst., Dept. of Hwy Safety
Coit Gilbert, Asst. Adm. Director, Supreme Court of Ohio
Martin Elekes, Supvr., EMS Coordinating Program, Dept. of Health
Capt. E. D. Overly, Commander, Planning & Research Section,
State Highway Patrol
Leonard Porter, Supvr., Alcohol Testing & Permit Program,
Department of Health
William Sell, Chief, Driver Educ. Section, Dept. of Education
Mr. Bob Gilmore, EMS Staff
Mr. Bill Snouffer, EMS Staff

Akron, Ohio

Howard Beabout, Lt., Traffic Bureau Uniformed Div., Police Dept.
Shirley Bee, Exec. Director, EMS Counsel
James Buie, Lt., Services Sub-Division, Police Dept.
Carol DeBaer, Dir., Summit-Portage Comprehensive Health Planning Agcy
Bob Forest, Hospital Ambulance Service
Ronald E. Fuchs, Manager, Ambulances, Dunn-Tugiley Funeral Home
Vaughn Leigh, App't Sec'y, Mayor's Office
Mike Lozowy, Stampfle Co-op Ambulance Service
Lt. R. Lord, Fire Dept. (Dispatch)
James McCormick, Dir. of Alcoholism Division, Dept. of Health
Lane Orem, Sgt., Traffic Bureau, Police Dept.
Ray J. Schulter, Chief Probation Officer, Municipal Court
Leonard Strawdermann, Capt., Services Sub-Division, Police Dept.
Pat Turner, Statistician, Coroner's Office
Eric Voth, Pres., Physicians & Surgeons Ambulance Service
Lawrence J. Walsh, Clerk, Municipal Court
Dave Zanapelli, Chief Deputy Clerk, Criminal Division, Municipal Ct.
Bob Zeh, Director, DWI School

Alliance, Ohio

James R. Black, Captain, Police Dept.
Jeff Jakimedes, Municipal Ct. Probation Services Officer
Susan A. Sisak, Clerk, Municipal Court
Robert Smith, Director, Alliance Ambulance Service
John Thomas, Judge, Municipal Court
George Ziga, Chief of Police

Cincinnati, Ohio

Bill Baird, A-1 Ambulance Service
Letty Bergstrom, Mental Health Services
Dr. Frank Cleveland, Hamilton Co. Coroner
James Combs, Lt., Police Department
Jim Ditzle, Program Management, Police Department
Gary Groins, Asst. Supvr., Police Data Processing Unit
Col. Grothaus, Police Dept.
W. D. Heisel, Dir., Inst. of Governmental Research, U. of Cincinnati
Mr. Kilgore, President, Kilgore's Ambulance Service
Mr. Linn, Police Department
Burt Lugannani, Chief, Fire Dept.
Phil Muldon, Deputy Dir. of Corrections, Municipal Court
Ms. Niesin, Niesin's Ambulance Service
Wanda Pratt, Adm. Asst. to County Administrator
Mr. Shoemaker, Shoemaker's Ambulance Service
Seth Staples, Coordinator, ASAP
Robert Steltenpohl, Administrative Asst. to ASAP Coordinator

Hamilton, Ohio

Wilma Cress, Director of Nurses, Alcoholism Council of Butler Co.
Asst. Chief Durrough, Fire Dept.
John Fisher, Owner-President, Lifeline Ambulance, Inc.
Betty Hillman, Clerk-Typist, Police Dept.
Nancy Kirgan, Asst. to Director of Finance
Henry Smith, Lt., Police Dept.
Bill Yaw, Fire Dept.
Marian Youtsey, Municipal Court Clerk

Kent, Ohio

Noel Blankenship, Dir., Portage Co. DWI "Counterattack", Kent St. U.
Tom Craven, Municipal Court Administrator
Helen Fredrick, Auditor's Office, Portage Co.
Gary Grecco, Bailiff, Portage Co. Mun. Ct., Kent Branch
Ronald Heineking, Chief of Police
Alyce Sandra Kalson, Clerk Dispatcher, Police Dept.
Mike Mercer, President, Kent Ambulance, Inc.
Andrew Miller, Patrolman, Police Dept.
Joseph M. Sorboro, Mayor
Edie Weincek, Clerk Dispatcher, Police Dept.

Lexington, Ohio

Richard Carter, Chief of Fire Dept.
Alan M. Cooke, Mayor and Judge, Mayor's Court
Marie Fish, Clerk of Treasury , Lexington Township
William Rein, Chief of Police

Marion, Ohio

Boyd's Funeral Home
Charles Ciola, Sgt., Police Dept.
June Clopsaddle, Deputy Clerk, Municipal Court
Harold Denzer, Jr., Denzer Funeral Home
Robert Exley, Chief of Police
Sam Flesher, Fire Fighter, Fire Dept.
Robert T. Gray, M.D., Coroner
Marjorie Huddle, Clerk, Police Dept.
Twila Long, Clerk, Municipal Court
Jeff Ovenden, Assoc. Dir., Marion Council on Alcohol & Drugs
Bob Varner, Fire Fighter, Fire Dept.
Kenneth Wakely, Chief of Fire Dept.
Robert Wooley, City Auditor

Millersburg, Ohio

James Alexander, Pres., Hunter Alexander Funeral Home
William Barton, Squad Captain, EMS Service, Fire Dept.
Richard Foltz, Chief of Fire Dept.
John Miller, Funeral Dir., Elliot/Hartline Funeral Home
Carl E. Starmer, Chief of Police

Sharonville, Ohio

Mr. Baysore, Safety Serv. Administrator, Exec. Dept. (Mayor's Office)
Gloria Cervoli, Director, Mental Health Service
W. R. Nuss, Chief of Police
Dixie Schlenskir, Adm. Clerk, Police Dept.

Wooster, Ohio

Judge Eberhardt, Municipal Court
James Endres , Director, Endress Ambulance Service
Neal Maurer, Dir., McIntire Funeral Home
James Pearce, Chief of Police
James Pyers, Record & Finance of Wooster City
Ed Schuck, Chief of Fire Dept.
Capt. James Wilson, Police Dept.

UTAH

Raymond A. Jackson, Commissioner, Dept. of Public Safety,
Governor's Representative
Elroy Jones, Dir., Special Programs Div., Dept. of Public Safety
Byrum Penrod, Program Coordinator for Utah Hwy Safety Office,
Dept of Public Safety

Roy Byrd, ASAP Evaluator - Applied Management Corp.
Arthur G. Christean, Deputy Adm., Office of the Ct. Administrator
Earl N. Dorius, Dir., Driver License Div., Dept. of Public Safety
Sgt. Don Jensen, Safety Inspection Div., Utah Highway Patrol
Ralph Jones, Peace Officers Studies and Training
Darrell Josie, Specialist, Driver & Safety Educ., Curriculum Div.
Larry Lunnen, ASAP Director
Capt. John Rodgers, Field Div., Utah Highway Patrol
Richard L. Warburton, Chief of EMS, Div. of Health,
Bureau of Local Health Serv., Utah Dept. of Social Services

Layton, Utah

Walter C. Bright, Jr., Owner, Ace Ambulance Service
Dr. Roy Byrd, V.P., Allied Corp., Consultant for ASAP
Ruth Rudd, Clerk, City Court
Lt. Morton Sparks, Asst. Chief of Police

Midvale, Utah

Armond Bosh, Chief of Midvale Volunteer Fire Dept.
Judge Cole, City Court
Louis Smith, Chief of Police

Murray, Utah

Judge Griffith, City Court
Val Loveless, Secretary, Police Dept.
Sgt. Lynn Turner, Police Dept.

Ogden, Utah

Dr. Roy Byrd, Vice President, Allied Corp., Consultant for ASAP
L. A. Jacobson, Chief of Police
Mr. Moss, President-Owner, Moss Ambulance Service

Provo, Utah

Chief Brown, Head of EMS, Provo City Ambulance Service
Sgt. Foster, Police Dept.
Mrs. Hatfield, Secretary, Provo City Ambulance Service
Lt. Roy Hurst, Dir. of Traffic, Police Dept.
Chief Nelson, Police Dept.

Richfield, Utah

Jay Applegate, Justice of the Peace
Allen Blomquist, Judge, Justice Court of Sevier County
Nelson Jorgerson, Chief of Police
Neil Magelby, Magelby Mortuary
Bill Pryor, President, Sevier Co. Vol. Ambulance Service
Springer and Peterson Mortuary

Salt Lake City, Utah

Mr. Brockard, Statistician, Bureau of Health Statistics
Roy Byrd, Head of Evaluation, Alcohol Safety Action Project
Capt. Campbell, Head of Traffic, Police Dept.
E. G. Cederlof, Asst. Chief of Police
Chief DeKorver, Head of EMS & Fire Dept.
Chief Fillio, Police Dept.
Mr. Greener, Police Commissioner, Dept. of Public Safety
Dick Howard, Head of Enforcement, Dept. of Public Safety
Gene Moffet, Dir., Go Cross Ambulance
Weldon Nichols, Dept. of Traffic Violations, Metro Hall of Justice
Fred Oswald, City Court Administrator
Don Perkins, Statistician, Bureau of Health Statistics
Joice Robinson, Manager of Grants & Admin., Dept. of Public Safety
Peggy Stanley, MRU, Police Dept.
Betty Stanton, Sec. for all Enforcement, Police Dept.
Dick Warburton, Head of EMS, Div. of Health

Tooele, Utah

Guy Armstrong, Chief
Emily Gillette, Owner, Gillette Ambulance Service
Louise Hardy, City & Court Clerk

Vernal, Utah

Nick Eaton, Deputy Sheriff, Owner of Ambulance Service
Jonathan Jones, Chief of Police

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VIRGINIA

John T. Hannah, Director, Highway Safety Division
R. W. DuVal, Assistant Dir., Highway Safety Division
Walter Douglas, Highway Safety Division
Luke Campbell, Coordinator/Supervisor

Major Boldin, Director, All Fields Units, Virginia State Police
Mr. Gillespie, Dept. of Education
Tom Jordan, Asst. to Chief Medical Examiner, State Dept. of Health
Ken Mutter, EMS, Dept. of Health
Dr. Charles O'Rear, State Dept. of Health
Dick Spring, Driver Services Administrator, Div. of Motor Vehicles
Jack Williams, Statistics, Virginia State Police

Alexandria, Virginia

Edwin J. Dentz, Coordinator, Div. of Alcohol Serv., City Health Dept.
James P. Myers, City Attorney
Sylvia Newman, Research Assistant, Alcohol & Drug Abuse
Barry Schwartz, Dept. Coordinator, Alcoholism & Drug Abuse Programs
Clyde Scott, Captain, Police Dept.

Fairfax County, Virginia

George H. Alexander, Director, Fairfax Co. Fire & Rescue Service
Barent F. Landstreet, Director, Fairfax City/Co. ASAP
Katy Ratiner, Admin. Asst., General District Court
Mr. Stout, Dir. of Planning, Research & Budget, Police Dept.

Farmville, Virginia

O. S. Overton, Chief of Police
Joe Ramsey, President, Rescue Squad

Greensville County, Virginia

W. S. Harris, Jr., President, Greensville Co. Volunteer Rescue Squad
Dr. James A. Kirkland, Coroner
Naomi L. Meade, Clerk of the General District Court
E. D. Sasser, Sheriff
Robert Wrenn, Clerk of the Circuit Court

Hampton, Virginia

Mrs. Susan Brosh, Sec'y to Fire Marshall
Sgt. D. B. Goodwillie, Police Dept., Traffic Bureau
B. L. Renn, Fire Marshall
Tommy Sanders, Dispatcher, Fire Dept.
Dan Whipple, General District Court Supervisor, Traffic Div.

Henrico County, Virginia

Lonnie Brand, President, Henrico Volunteer Rescue Squad
Tom Denzler, President, Tuckahoe Rescue Squad
Capt. J. R. Lindsey, Police Dept.
James Young, President, Lakeside Volunteer Rescue Squad

Isle of Wight, Virginia

B. F. Dickson, Sheriff Dept.
Mrs. B. F. Dickson, Clerk, General District Court
Nelson Edwards, President, Smithfield Rescue Squad
Gerald Howell, Captain, Operations, Isle of Wight Vol. Rescue Squad

Lancaster County, Virginia

Deputy Campbell, Police Dept.
Mr. Newcomb, President, Waverly Rescue Squad
Mrs. J. E. Simmons, Clerk, General District Court

Marion, Virginia

Elmer Blevins, Capt., Smyth Co. rescue Squad
Walter J. Boone, Chief of Police
Judge Francis M. Hoge, Juvenile-Domestic Relations Court,
Smyth Co. General District Court
Earl Miller, Secretary, Smyth Co. Rescue Squad
Louise Robbins, Clerk, General District Court

Petersburg, Virginia

P. T. Barfield, Capt., South Side Va. Emergency Crew
Harvey Fowler, Clerk, City Court
Wayne Shields, Capt., Police Dept.

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Prince Edward County, Virginia

Kathleen Morris, Clerk, Gen. District Court
Howard Simpson, Sheriff
Joe Ramsey, Pres., Rescue Squad

Roanoke City Virginia

Dale Byingron, Asst. Dir., Roanoke Valley Health Services
Linda Bywater, Secretary, Police Dept.
Sgt. Henry F. Kilby, Police Dept.
Everette L. Walters, District Court Clerk

Roanoke County, Virginia

Capt. R. R. Altice, Vinton Rescue Squad
Francis Bloomer, Clerk of the District Court
Dale Byington, Asst. Dir., Roanoke Valley Health Services, Planning Council
Major Chew, Sheriff's Office
Betty Deery, Secretary, Sheriff's Office
Capt. J. E. Robertson, Sheriff's Office

Staunton, Virginia

Ron Bruebeck, Pres., Staunton/Augusta Co. Rescue Squad
Capt. T. E. Fitzgerald, Asst. Chief of Police
Mac McCauley, Secretary, Staunton/Augusta Co. EMS
Dr. Alex Mizzi, City Medical Examiner
Roy Robertson, Commonwealth Attorney
Joe Walton, Clerk of the Dist. Court

Wise County, Virginia

Wm. Kelley, Chief Deputy, Sheriff's Office
Jack Lloyd, Minister, Rescue Squad
Kyle Robinson, President, Wise Co. Rescue Squad, Inc.
Richard Sites, Clerk of the General District Court

WASHINGTON

Clifford E. Aden, Dir., Washingron Traffic Safety Commission,
Governor's Representative
Ronald MacDonald, Asst. Dir., Washington Traffic Safety Commission
Chuck Hayes, Field Supvr., Washington Traffic Safety Commission

Fred Baker, Lt., Research & Planning, Washington St. Patrol
R. L. Erhart, Capt., Research & Planning, Washington St. Patrol
Howard Farley, Dir. of HMS, Dept. of Social & Health Services
William F. Hiblar, Supv., Traffic Safety Educ. Programs,
Div. of Special Programs and Services
Dave Kirk, Admin., Driver Improvement Div., Dept. of Motor Vehicles
Bob Koch, Asst. Dir. for State Driver Serv., Dept. of Motor Vehicles
Jim Larsen, Administrator for Courts
Glen Miller, Alcohol Div., Dept. of Social & Health Services
Gary Shipler, Program Consultant, Alcohol Div.,
Dept. of Social & Health Services
Charles W. Stansbury, Asst. Administrator, Dept. of Motor Vehicles

Bellevue, Washington

Ms. Copinger, Central Dispatch, Shepard Ambulance Service
Pat Cummpings, Bellevue Fire Dept.
Lorraine Nelson, Admin. Clerk, District Court
Paul Olson, Lieutenant, Police Dept.
Tony Shock, Supervisor, Community Services
Barb Star, E. Side Alcohol Referral Center
Dan Sterling, Chief of Fire Dept.
Lieutenant Wallace, Police Dept.
Judge Wartnick, District Court
Robt. H. Wittauer, Captain of Traffic, Police Dept.

Bremerton, Washington

Mel Gengrey, Chief of Police
Mr. Jandzinsky, Municipal Court
Mr. Leyde, Owner, King's Ambulance Service
Captain Stratton, Police Dept.

Clark County, Washington

Al Casebere, Community Services, Sheriff's Office
Dennis David, Traffic Coordinator, Sheriff's Office
Dr. Hamilton, Pathologist, Coroner's Office/St. Joseph's Hospital
Chris Onslow, Co-Owner, American Ambulance
Robert Rem, Coordinator, Civil Defense

Clark County, Washington - Continued

Lyle Truax, Judge, District Court
Germaine Turner, Budget/District Court
Gerald Weishaar, Budget Director, Clark County
George Wolfe, Owner, Alcohol Information Referral Service
Steve Wood, Co-Owner, American Ambulance

Ellensburg, Washington

Sheri Evans, Secretary to Bob Senders, Probation Officer
Don Heiner, Sergt., Records & Investigation, Police Dept.
R. A. McBride, Sgt., Washington St. Patrol, Ellensburg Detachment
Lt. Ben Smith, Acting Chief of Police
Judge John Thomas, Municipal Court
Dorophy Weaver, Clerk of the Municipal Court
Ed West, Chief of the Fire Dept.

Kittitas County, Washington

Ramon Benavides, Under Sheriff
Margaret Brandt, Court Commissioner, Lower Kittitas Co. Ct.
Judy Englar, Clerk, Upper Kittitas Co. District Ct.
Sheri Evans, Secretary to Bob Senders, Misdemeanor Probation Officer
Peggy Kuchin, Clerk, Upper Kittitas Co. District Ct.
R. A. McBride, Sgt., Washington Highway Patrol
Jerri Pardini, Hospital Clerk, Roslyn-Cle Elum Hospital
Bob Senders, Probation Officer
Judge John Thomas, Lower Kittitas Co. District Court
Ed West, Fire Chief

Mountlake Terrace, Washington

Don Buehler, Captain, Police Dept.
Robert C. Fox, Chief of Police
Don Garberg, Fire Chief
Mary Niedert, Violations Bureau Clerk, Police Dept.
Greg Ritter, Asst. Manager, Snow King Ambulance Service
Ron Shultz, Senior Counselor, Probation Dept., So. District Court
Marge Wood, Ct. Administrator, South District Court

Spokane, Washington

Art Crummett, General Manager, Spokane Services Co.
Forrest Day, Asst. Dir., Alcohol Information Program, District Ct.
Harry Dirks, Administrator, Community Personal Guidance Board
Helen Franz, Clerk of the Municipal Court

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Spokane, Washington - Continued

Lt. Oien, Police Dept.
Paul Olson, Fire Chief
Dr. Lois Shanks, Coroner's Office

Sumner, Washington

Ron Hyland, Police Chief
Louis Noel, V.P./General Manager, Powers Ambulance Service
Joanne Palmer, Municipal Court & Police Clerk/Policewoman

Sunnyside, Washington

Eileen Duling, Deputy Clerk, Yakima Co. District Court
Judy Essary, Deputy Clerk, Yakima Co. District Court
Howard Kelleher, Community Alcoholism Counselor
James McGahey, Ball Ambulance
Robert McIntosh, Ball Ambulance
Joyce Miller, Matron, Police Dept.
Larry Ward, Chief of Police

Vancouver, Washington

Dr. Hamilton, Pathologist, Coroner's Office/St. Joseph's Hospital
Robert Kem, Coordinator, Civil Defense
Royce Lawrence, Finance Director, City of Vancouver
John Lund, Traffic Officer/Medical Training Officer, Police Dept.
Donald Mose, Sgt., Commander of Records & Identification,
Assistant Budget Officer, Police Dept.
Chris Onslow, American Ambulance
Lois Schoonover, Traffic Clerk, City Police
James Taylor, Sgt., Traffic Division, City Police
Germaine Turner, Budget Director, District Court
Lyle Truax, Judge, District Court
George Wolfe, Alcohol Information Referral Service
Steve Wood, American Ambulance